FINAL ENVIRONMENTAL IMPACT REPORT

**APPENDICES**

# Santa Cruz Water Rights Project

**Prepared for**

City of Santa Cruz Water Department

212 Locust Street, Suite C • Santa Cruz, CA 95060

**NOVEMBER 2021**

Our Water, Our Future

Prepared by

**DUDEK**

725 Front Street, Suite 400

Santa Cruz, CA 95060

SCH NO. 2018102039

Contact: Sarah Easley Perez

# Appendix A

## Notice of Preparation, Initial Study, and Scoping Comments

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# NOTICE OF PREPARATION

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**CITY OF SANTA CRUZ WATER DEPARTMENT**
212 Locust Street • Suite C • Santa Cruz, CA 95060 • www.cityofsantacruz.com

October 15, 2018

## NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT

**RE: Santa Cruz Water Rights Project**

To Interested Agencies and Persons:

The City of Santa Cruz (City) as the Lead Agency for the Santa Cruz Water Rights Project (Proposed Project) has issued this Notice of Preparation (NOP) and prepared an Initial Study (IS) pursuant to the California Environmental Quality Act (CEQA) to notify interested parties of the preparation of an Environmental Impact Report (EIR). The EIR will evaluate potential environmental impacts of the Proposed Project. The City is soliciting public input regarding the scope and content of environmental information to be included in the EIR.

Two public scoping meetings regarding the Proposed Project and EIR will be held as follows:

- Wednesday, November 7 at 6:30 at the Harvey West Scouthouse, 326 Evergreen Street, Santa Cruz CA 95060
- Thursday, November 8 at 6:30 at the Highlands Park House, 8500 Highway 9, Ben Lomond CA 95005

Written comments received in response to this NOP will be considered during preparation of the EIR. Comments can be submitted at the public scoping meetings or mailed to the following address. Comments must be received in writing by 5 pm on November 14, 2018.

Sarah Easley Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
seasleyperez@cityofsantacruz.com

Ms. Perez is the project contact and can be reached by phone at (831)420-5327, or via the email address listed above.

The IS/NOP is available online at:
https://www.cityofsantacruz.com/government/city-departments/water/online-reports/environmental-documents

The IS/ NOP is also available for public review during regular business hours at the following locations:

- City of Santa Cruz Water Department; 212 Locust Street, Suite C, Santa Cruz, CA, 95060
- Santa Cruz Public Library Aptos Branch; 7695 Soquel Drive, Aptos, CA, 95003
- Santa Cruz Public Library Central Branch; 224 Church Street, Santa Cruz, CA, 95060-38
- Santa Cruz Public Library, Felton Branch ; 6299 Gushee Street, Felton, CA 95018-9140

**Project Location.** The Proposed Project involves the City's water system and its water service area as well as the service areas of Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and Central Water District. The Proposed Project is located within Santa Cruz County and is loosely bounded by the community of Soquel and the City of Capitola to the east, Bonny Doon Road to the west, Boulder Creek to the north, and the Pacific Ocean to the south. Refer to Figure 1, Regional Location.

Major components of the City's water system include Loch Lomond Reservoir in Ben Lomond, two diversions on the San Lorenzo River (in Felton and in the City of Santa Cruz), four diversions on North Coast streams (on Majors, Laguna, Liddell and Reggiardo Creeks), and groundwater wells within the Santa Cruz Mid-County groundwater basin in the community of Live Oak. The water service area includes the City of Santa Cruz, a portion of the City of Capitola, and unincorporated Santa Cruz County in Live Oak, Soquel, and along Graham Hill Road. The City also has a limited water service area along the coast north of the City, primarily along Highway 1 up to Bonny Doon Road. Refer to Figure 2, Santa Cruz Water Department Existing Facilities.

The Soquel Creek Water District serves the mid-region of Santa Cruz County, which includes portions of the City of Capitola and the unincorporated communities of Aptos, La Selva Beach, Rio Del Mar, Seascape, Seacliff Beach and Soquel. The Scotts Valley Water District serves the majority of the City of Scotts Valley and a portion of the unincorporated area to the north. The San Lorenzo Valley Water District service area includes the unincorporated communities of Boulder Creek, Brookdale, Ben Lomond, and portions of Felton, as well as portions of Scotts Valley and adjacent unincorporated areas. The Central Water District serves a portion of the unincorporated community of Aptos. Refer to Figure 3, Potential Partnering Regional Water Districts.

**Project Description.** The Proposed Project addresses key issues needed to improve the City's water system flexibility while enhancing stream flows for local anadromous fisheries, particularly for Central California Coast coho salmon, a federally listed endangered species, and Central California Coast steelhead, a federally listed threatened species. The Proposed Project includes components that will be considered in the EIR at a "project" level (per CEQA Guidelines Section 15161) and components that will be considered in the EIR at a "programmatic" level (per CEQA Guidelines Section 15168) as described below.

*Project Components*
The Proposed Project involves modification of existing City water rights to increase the flexibility of the water system by improving the City's ability to utilize surface water within existing allocations. The Proposed Project includes:

- Flow Requirements: Modifying City water rights to include minimum bypass flows as negotiated with state and federal resource agencies to protect fisheries (Agreed Flows);
- Places of Use: Conforming and expanding the Places of Use (POUs) of City water rights to include Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and Central Water District;
- Diversion Methods and Points: Modifying certain City water rights to include direct diversion as an allowable method of diversion and including existing City diversion points as added points of diversion to certain City water rights;
- Extension of Time: Granting an extension of time of 25 years to beneficially utilize water allowed under certain City water rights permits.

Both the City and the State Water Resources Control Board (SWRCB) have discretion over approvals relating to water rights actions associated with the Proposed Project.

*Programmatic Components*
Once the City's water rights are modified, the following additional foreseeable activities may occur:

- Felton Diversion Fish Passage Improvements: Implementing improvements to address fish passage, which may include replacement of existing screens, installation of a traveling brush system, and construction of a continuous outmigration bypass route.
- Interties: Developing or improving interties between City of Santa Cruz and Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and/or Central Water District.

Because these activities are considered to be a logical part in a chain of contemplated actions, but the full physical extent and timing of these improvements is not known at this time, these activities will be addressed in the EIR at a programmatic level. Some of these actions may be undertaken in conjunction with surrounding districts and some may be undertaken solely by the City.

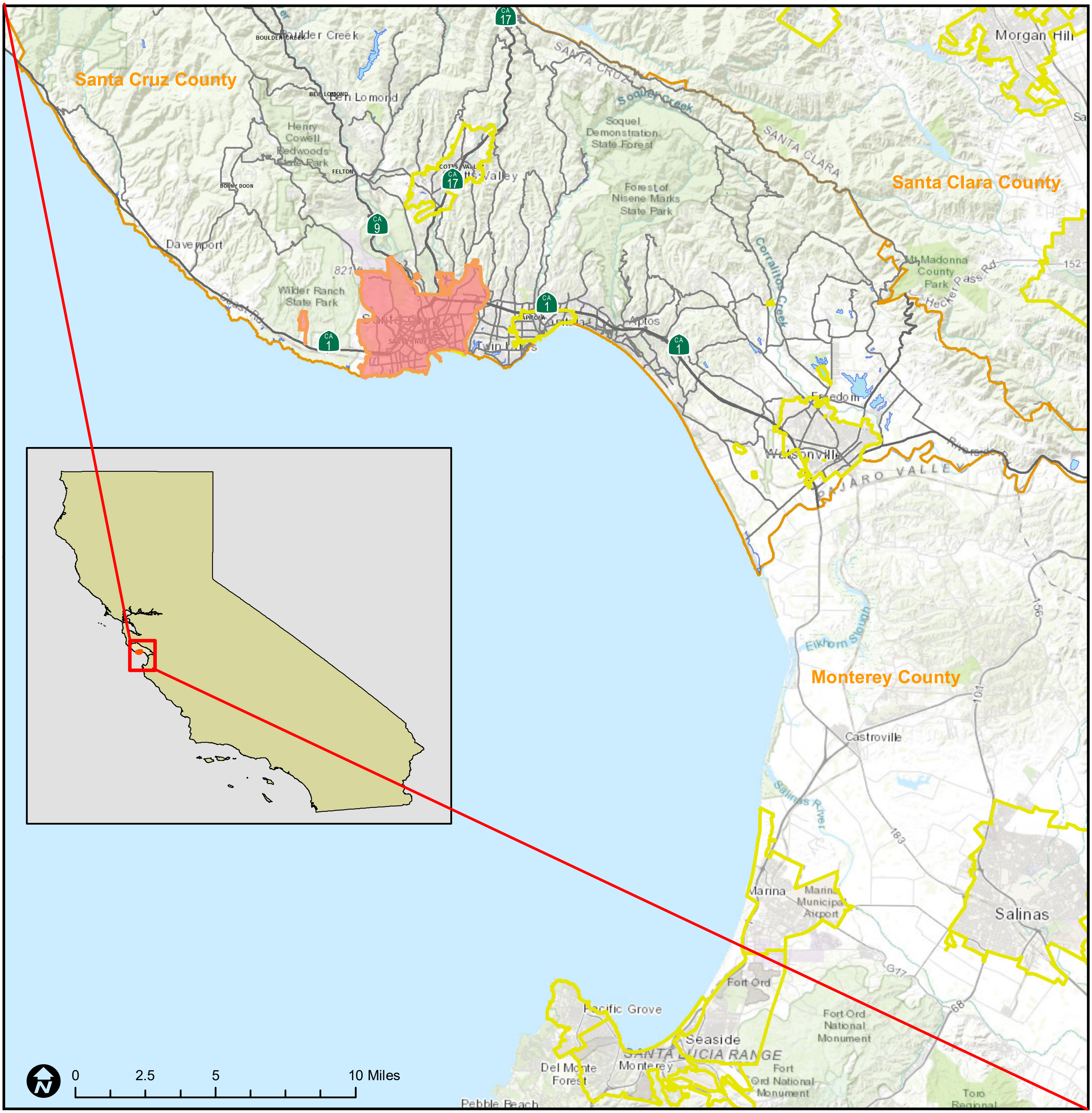
**Potential Environmental Effects of the Proposed Project.** Preliminary review pursuant to CEQA *Guidelines* Section 15060 and the Initial Study prepared for the Proposed Project has determined the need for an EIR to assess potentially significant environmental impacts of the Proposed Project. Written comments received in response to this IS/NOP will be considered during further development of the scope and content of environmental information to be included in the Draft EIR.

As shown in **Table 1**, the Initial Study has identified the following environmental issue areas as requiring further analysis in the EIR at either a project level, programmatic level, or both.

**TABLE 1**
RESOURCE AREAS REQUIRING FURTHER ANALYSIS IN EIR

| Resource Area | Project Level Analysis | Programmatic Level Analysis |
|---|---|---|
| Air Quality | X | X |
| Biological Resources | X | X |
| Cultural Resources (including Tribal Resources) | X | X |
| Geology/Soils | | X |
| Greenhouse Gas Emissions | X | X |
| Hazards and Hazardous Materials | | X |
| Hydrology & Water Quality | X | X |
| Land Use | X | X |
| Noise | | X |
| Population & Housing | X | X |
| Public Services | | X |
| Transportation & Traffic | | X |
| Utilities and Service Systems | X | X |

## *SANTA CRUZ WATER RIGHTS PROJECT*




City of Santa Cruz City Limits

Cities

State Highways

Roads

County of Santa Cruz

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

CITY OF SANTA CRUZ

Figure 1:
Regional Location


CITY OF SANTA CRUZ

Figure 2:
Santa Cruz Water Department Existing Facilities

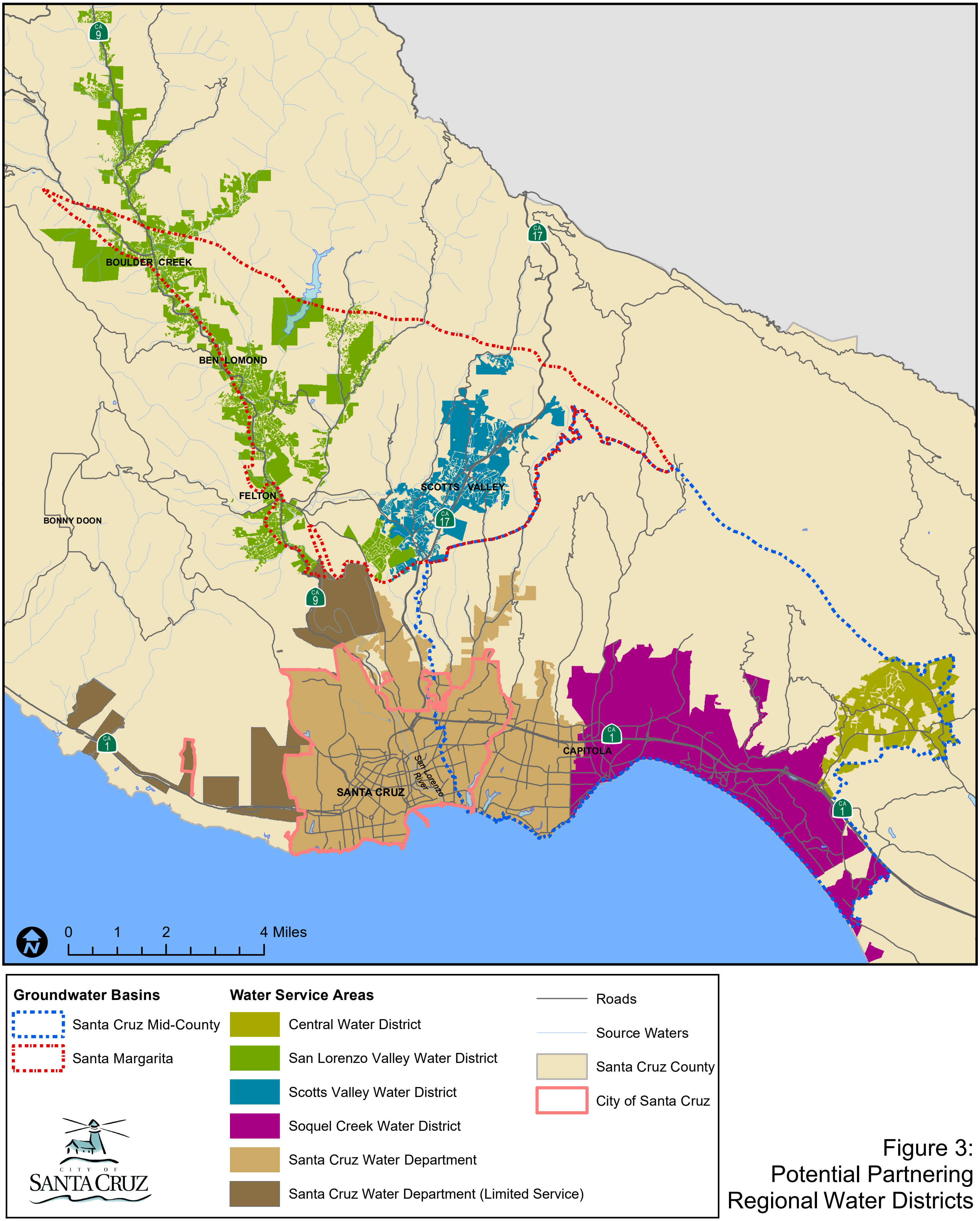



Figure 3:
Potential Partnering
Regional Water Districts

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# INITIAL STUDY

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# City of Santa Cruz Water Department
## INITIAL STUDY/ENVIRONMENTAL CHECKLIST

## I. BACKGROUND & PROJECT DESCRIPTION

### Background

Project Title: Santa Cruz Water Rights Project

Lead Agency and Sponsor:

City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
www.cityofsantacruz.com

Contact: Sarah Easley Perez, Associate Planner, (831) 420-5327

Project Location:

The Proposed Project involves the City's water system and its water service area as well as the service areas of Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and Central Water District. The Proposed Project is located within Santa Cruz County and is loosely bounded by the community of Soquel and the City of Capitola to the east, Bonny Doon Road to the west, Boulder Creek to the north, and the Pacific Ocean. Refer to Figure 1, Regional Location.

Major components of the City's water system include Loch Lomond Reservoir in Ben Lomond, two diversions on the San Lorenzo River (in Felton and in City of City of Santa Cruz), four diversions on North Coast streams (on Majors, Laguna, Liddell and Reggiardo Creeks), and groundwater wells within the Santa Cruz Mid-County groundwater basin in the community of Live Oak. The water service area includes the City of Santa Cruz, a portion of the City of Capitola, and unincorporated Santa Cruz County in Live Oak, Soquel, and along Graham Hill Road. The City also has a limited water service area along the coast north of the City, primarily along Highway 1 up to Bonny Doon Road. Refer to Figure 2, Santa Cruz Water Department Existing Facilities.

The Soquel Creek Water District serves the mid-region of Santa Cruz County, which includes portions of the City of Capitola and the unincorporated communities of Aptos, La Selva Beach, Rio Del Mar, Seascape, Seacliff Beach and Soquel. The Scotts Valley Water District serves the majority of the City of Scotts Valley and a portion of the unincorporated area to the north. The San Lorenzo Valley Water District service area includes the unincorporated communities of Boulder Creek, Brookdale, Ben Lomond, and portions of Felton, as well as portions of Scotts Valley and adjacent unincorporated areas. The Central Water District serves a portion of the unincorporated community of Aptos. Refer to Figure 3, Potential Partnering Regional Water Districts.

General Plan Designation and Zoning: Not Applicable

## Introduction:

The City of Santa Cruz (City) is proposing the Santa Cruz Water Rights Project (Proposed Project) to improve City water system flexibility while enhancing stream flows for local anadromous fisheries. For the Proposed Project, the City is submitting petitions requesting the SWRCB approve associated changes (change petitions) to existing City water rights regulated by that agency. In addition, the City proposes changes to its own water rights that are not regulated by the SWRCB through action by the Santa Cruz City Council. The combination of these changes to City water rights would help to ensure future water supply resiliency. Additional foreseeable activities that may occur after the proposed water rights changes are also being considered.

The City of Santa Cruz Water Department provides drinking water from a variety of sources to residents of the City and surrounding areas. The City's water supply system draws water from surface water sources including the San Lorenzo River system and several other local North Coast streams, which make up approximately 95% of the annual supply. That amount is supplemented by limited production from groundwater wells in the Santa Cruz Mid-County basin. The City stores water in Loch Lomond Reservoir formed by Newell Creek Dam to help meet dry-season water demand and provide back-up supply during winter storms that make river diversions problematic due to turbidity issues. The City Water Department, like other water suppliers in Santa Cruz County, has no imported water supply from outside the region. Due to limited water supply and storage, the City faces inadequate water supply during dry years and critical shortages during drought years.

## Habitat Conservation Plan Development

Since 2001, City Water Department staff have been developing a Habitat Conservation Plan (HCP) with the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) staff for California Endangered Species Act and Federal Endangered Species Act compliance for Water Department operations that may affect special-status anadromous salmonids, specifically the Central California Coast coho salmon (coho salmon), a federally listed endangered species, and the Central California Coast steelhead (steelhead), a federally listed threatened species. This process has been lengthy due to the nature of the data required for long-term permitting, the inherent challenges of balancing water supply with environmental water demands, agency staff changes, the drought of 2012 through 2015, and other related factors.

Final HCP chapters and permit applications are expected to be submitted to CDFW and NMFS by late winter or early spring 2019. Initiation of environmental review for the HCP and associated permits is expected to commence in early fiscal year 2020 with the goal of permit process completion by late 2021 or early 2022.

To protect endangered coho salmon and threatened steelhead trout, the City has negotiated minimum stream flow requirements (Agreed Flows) with CDFW and NMFS as part of the HCP process. Currently, the City is implementing the Agreed Flows at the diversions on the North Coast streams and at one of two diversions on the San Lorenzo River that supply surface water to the City. This implementation of the Agreed Flows further reduces the City's dry-year and drought-year water supply reliability.

The City's and CDFW's agreement on an HCP may be subject to a separate review under CEQA, and NMFS's approval of an HCP may be subject to a separate environmental review under the National Environmental Policy Act. However, as both CDFW and NMFS have tentatively agreed, the City has committed to implement these Agreed Flows as part of this Proposed Project regardless of the final outcome of the HCP process. Prior to the public circulation of the Draft EIR for the Proposed Project, the City has committed to filing a Lake and Streambed Alteration Notification with CDFW to address implementation of the Agreed Flows.

## Regional Considerations

The Proposed Project would be aligned with State of California policies favoring regional water management. State policy included in the Integrated Regional Water Management Planning Act states "It is the intent of the Legislature to encourage local agencies to work cooperatively to manage their available local and imported water supplies to improve the quality, quantity, and reliability of those supplies."[1] This is particularly significant for the Santa Cruz region, which has only local sources of water, and for the City because the City's surface water sources are the only significant existing surface water sources in the immediate region.

The Proposed Project could enable the City to assist in the implementation of the landmark 2014 Sustainable Groundwater Management Act (SGMA). The City's water system and service area overlap both the Santa Margarita and the Santa Cruz Mid-County groundwater basins. In both basins, the City is represented on the Board of Directors for the associated groundwater sustainability agency. These agencies are in the process of preparing groundwater sustainability plans under SGMA for each basin. Conjunctive use of surface water supplies with groundwater supplies could contribute to the overall health of both basins and increase water supply resiliency overall for the major population centers of northern Santa Cruz County. Water right modifications to increase flexibility are necessary for the City to fully participate in regional conjunctive use.

## Existing Water Rights

There are generally two types of appropriative water rights recognized in California: pre-1914 and post-1914. The City currently holds both pre-1914 and post-1914 water rights. The year 1914 is significant because, effective December 9, 1914, the California Legislature enacted a requirement that a state agency authorize new appropriations of water from surface water sources in California. Before 1914, public agencies and private individuals and entities were able to initiate appropriative water rights through their own actions, which in some cases was provided by posting notices adjacent to diversions. Changes to post-1914 water rights now involve a more formalized approval process through the SWRCB, potentially including a full CEQA analysis and opportunities for public involvement. Changes to the pre-1914 water rights can be made by City Council adoption of a resolution amending those rights as required by existing City Council procedures.

### *Pre-1914 Water Rights*

The City's pre-1914 water rights authorize diversions from several streams located north of the City, including Liddell Spring (located within the East Branch Liddell Creek watershed), Laguna Creek, Majors Creek, and Reggiardo Creek (all collectively referred to as North Coast streams).

[1] See Water Code section 10531(a).

These appropriations are reflected in the City's Statements of Water Diversion and Use Nos. S002042, S002043, S002044, and S008610, on file with the SWRCB.

*Post-1914 Water Rights*

The City holds post-1914 appropriative water rights for Newell Creek and the San Lorenzo River under existing water right licenses and permits, respectively, issued by the SWRCB and predecessor state permitting agencies (**Table 2**). Under Water Code sections 1701 through 1705, these permits and licenses can be modified with SWRCB approval if such modifications would not increase the appropriations authorized under those permits and licenses and would not cause injury to other legal users of the water involved.

**TABLE 2**

SUMMARY OF POST-1914 EXISTING WATER RIGHTS HELD BY THE CITY

| Description | Felton (P. 16123) | Felton (P. 16601) | Newell Creek (L. 9847) | Tait (L. 7200 & 1553) |
|---|---|---|---|---|
| Priority | 10/20/1965 | 03/01/1971 | 12/12/1957 | 07/10/1963 & 06/09/1924 |
| Source | San Lorenzo River | San Lorenzo River | Newell Creek | San Lorenzo River |
| Point of Diversion | Felton Diversion Facility | Felton Diversion Facility | Loch Lomond Reservoir | Tait Street Diversion |
| Purpose of Use | Municipal | Municipal | Municipal, domestic, industrial, recreational, fire protection | Municipal and domestic |
| Maximum Diversion Rate | 3,500 gpm* | 20 cfs* | – | 6 cfs & 6.2 cfs |
| Amount | 3,000 afy* | 3,000 afy* | 5,600 afy Maximum storage in Loch Lomond Reservoir 8,624 afy | 4344 afy & 4489 afy |
| Season | 9/1 – 6/1 | 10/1 – 6/1 | 9/1 – 7/1 | 1/1 – 12/31 |
| Bypass Requirements | 10 cfs from 9/1 – 9/30<br>20 cfs from 10/1 – 5/31 | 25 cfs in October<br>20 cfs from 11/1 – 5/31 | 1 cfs | none |

gpm= gallons per minute; cfs= cubic feet per second; afy= acre-feet per year

*The two permits (P. 16123 and P. 16601) operate as a single combined diversion. The total quantity of water diverted shall not exceed 3,000 afy. The combined maximum rate of diversion to storage shall not exceed 20 cfs.

The City is currently authorized to divert water from the San Lorenzo River at the Felton Diversion Facility (Felton Diversion) under two separate permits (Permit Nos. 16123 and 16601). The permits allow for a combined maximum diversion of 3,000 acre-feet per/year (afy) to storage at Loch Lomond Reservoir between September 1 and June 1 (Permit 16123) and between October 1 and June 1 (Permit 16601). The City is also currently authorized to divert water from the San Lorenzo River at the Tait Diversion under two licenses (License Nos. 7200 and 1552). The Tait licenses allow for the direct diversion of up to 4,489 afy and 4,344 afy (the theoretical maximum), respectively, between January 1 and December 31.

Water diverted at Felton is transported by a large diameter pipeline and a series of pump stations to Loch Lomond Reservoir for storage. The City's license for the Loch Lomond Reservoir (License 9847) allows for a maximum of 5,600 afy of water to be diverted to storage between September 1 and July 1. The maximum amount of withdrawal of water from storage in the Loch Lomond Reservoir under this license is limited to 3,200 afy. The total maximum amount of water that this license authorizes to be held in the Loch Lomond Reservoir is 8,624 afy. Water from both the Felton Diversion and Newell Creek are stored in the Loch Lomond Reservoir. There is currently no explicit right for direct diversion of water from the Felton Diversion or Newell Creek.

## Purpose and Need

The Proposed Project addresses key issues needed to improve City water system flexibility while enhancing stream flows for local anadromous fisheries. Incorporating the Agreed Flows into all City water rights is necessary to benefit local fisheries, specifically for coho salmon and steelhead, but will further constrain the City's limited surface water supply. Consequently, the City needs to improve water system flexibility within existing allocations to allow better integration and use of this limited resource through water rights modification for Place of Use (POU) expansion, better utilization of existing diversions, and adding an extension of time to put water to full beneficial use. Additionally, some foreseeable activities may become necessary as result of the proposed water rights modification as described below.

### *Flow Requirements*

For the improvement of instream habitat and flow conditions for local coho salmon and steelhead, the City needs to ensure consistency in their pre-1914 and post-1914 water rights through implementation of the Agreed Flows as negotiated with CDFW and NMFS. The City has already begun implementing the Agreed Flows at diversion facilities on the North Coast streams and at the Tait Diversion on the San Lorenzo River, further constraining the City's limited water supply particularly in dry and drought years. Expanded implementation of the Agreed Flows to all City surface water rights may further impact the timing and rate of surface flows the City is currently entitled to use. The implementation of the Agreed Flows and resulting constraints on water supply are a primary driver of the City's need to increase the resiliency of the water supply system.

### *Places of Use*

To provide flexibility to fully beneficially use existing surface water rights and to provide opportunity for potential conjunctive use of those surface water rights in combination with groundwater, the City needs to conform and expand the POUs on existing City water rights. Expanded POUs to include the service areas of neighboring water agencies are necessary to improve the flexibility within which the city operates the water system to meet fish flows and customer demands. Neighboring water agencies the City could potentially partner with in the future include:

- Soquel Creek Water District;
- Scotts Valley Water District;
- San Lorenzo Valley Water District; and
- Central Water District.

Expanded POUs are also necessary for improving the potential for conjunctive use of the region's resources with adjoining water agencies in shared ground water basins. Conjunctive use of both surface and groundwater supplies could make some additional recovered groundwater available to the City and potentially to the region during drought and critically dry years.

*Diversion Methods and Points*

Currently, City appropriative water rights involve the storage of water at Loch Lomond Reservoir for later use. Under the Newell Creek License and Felton Permits as currently written (due to an oversight in the original filings), water may only be used after water has been in storage for at least 30 days. The terms of those existing permits and licenses have the potential to constrain the City's flexibility in delivering water for beneficial use until these 30 days have elapsed after the water is collected into the reservoir. To allow for better flexibility in the use of this resource, the City needs to be able to directly divert as a method of diversion from both the Felton Diversion Facility and Loch Lomond without a 30-day storage requirement.

Additionally, the current Felton Permits and Tait Licenses limit the amount of water that can be diverted for each facility individually. Because the implementation of the Agreed Flows will constrain the water system while being protective of local fisheries, the City needs to increase the flexibility of how the water system can be used. The City needs the option of diverting water under the existing San Lorenzo River water rights at either the Felton Diversion or the Tait Street Diversion to provide options for better integration and use of available water.

*Extension of Time*

Through an extensive and successful water conservation program, the City has served any growth in its service area with the same level of diversions; however, full implementation of the Agreed Flows necessitates increased flexibility within the water system, and the City will require additional time under their Felton Permits to fully reach beneficial use. Beneficial use includes the full use of existing water rights without interfering with other water rights holders while also benefitting local fisheries. Additional time is needed to fully reach the beneficial use for flexibility to implement a range of water supply options to meet City needs, including options consistent with SGMA either individually or in conjunction with partnering water agencies.

*Foreseeable Activities*

After completion of the proposed modifications to City water rights, some activities may be needed that would be considered to be foreseeable as a logical part in a chain of contemplated actions, including improving fish passage at the Felton Diversion and implementation of new and/or improved interties with neighboring water agencies. The City needs to implement fish passage improvements at the Felton Diversion to address concerns raised by CDFW and NMFS. These improvements must improve fish passage while being protective of City water rights. The City may also require new and/or improved interties with neighboring agencies for future projects that could become possible under the modified water rights.

## Project Description

The Proposed Project includes components that will be considered in the EIR at a project level (Project Components) and components that will be considered in the EIR at a programmatic level (Program Components) as described below.

### Project Components

The Project Components of the Proposed Project include modifications to existing water rights, which will be considered in the EIR at a project level of analysis per CEQA Guidelines 15161. **Table 3** identifies the specific modifications that are being requested for the both pre-1914 and post-1914 water rights.

**TABLE 3**
2018 PROPOSED WATER RIGHTS MODIFICATIONS (TO BOTH PRE-1914 AND POST-1914 WATER RIGHTS)

| Component | Proposed Modification | | | |
|---|---|---|---|---|
| | Flow Requirements | Place of Use | Diversion Method & Diversion Point | Extension of Time |
| **Pre-1914 Water Rights to be Amended by City Council Resolution** | | | | |
| City of Santa Cruz Water Rights for North Coast Streams | Modify pre-1914 water rights to apply Agreed Flows as minimum bypass flows to North Coast diversions | Modify the POUs in pre-1914 water rights to conform with those of the post-1914 rights and to include the service areas of potential partnering regional water districts* | none | none |
| **Post-1914 Water Rights to be Amended through change petitions filed with SWRCB** | | | | |
| Felton Permits:<br>▪ Permit 16601<br>▪ Permit 16123 | Add minimum bypass flows to reflect Agreed Flows and establish the timeline for fish passage and screening improvements.<br><br>Replace the 20 cfs diversion rate constraint with a limit that relies on implementation of the Agreed Flows without increasing the total authorized monthly diversion amount. | Expand the authorized POUs to ensure that the POUs of all of the City's water rights are consistent and include the service areas of potential partnering regional water districts* | Add direct diversion as a method of diversion for Permit 16123.<br><br>Add Tait Street Diversion as an authorized point of diversion. | Grant extension of time through 2043 to maximize beneficial use up to 3,000 afy. |
| Tait Licenses:<br>▪ License 7200<br>▪ License 1553 | Add minimum bypass flows to reflect Agreed Flows. | Expand the authorized POUs to ensure that the POUs of all of the City's water rights are consistent and include the service areas of potential partnering regional water districts* | Add Felton Diversion Facility as an authorized point of diversion. | none |
| Newell Creek License:<br>▪ License 9847 | Add minimum flows to reflect Agreed Flows. | Expand the authorized POUs to ensure that the POUs of all of the City's water rights are consistent and include the service areas of potential partnering regional water districts* | Add direct diversion as a method of diversion. | none |
| * Service areas of potential partnering regional districts to include: Soquel Creek Water District service area, Scotts Valley Water District service area, San Lorenzo Valley Water District service area, and Central Water District service area | | | | |

The City will pursue changes to its pre-1914 water rights through action by the Santa Cruz City Council. The City will pursue proposed changes to its post-1914 permits and licenses as new change petitions to the SWRCB that will supersede petition amendments filed by the City in 2006. No change to the authorized amounts of diversions under any of the City's appropriative water rights is proposed as part of the Proposed Project. Overall, implementation of these modifications would address key issues needed to improve water system flexibility for the City's water service area and enhance stream flows for local anadromous fisheries.

*Agreed Flows*

The Proposed Project would include modifying City water rights to incorporate the Agreed Flows the City negotiated with CDFW and NMFS to better protect federally listed coho and steelhead in all watersheds from which the City diverts water. The Agreed Flows would be incorporated into both pre-1914 rights on the North Coast streams and post-1914 permits and licenses on the San Lorenzo River and Newell Creek. While it is expected that Agreed Flows will be further codified through the HCP process and a Streambed Alteration Agreement with CDFW, the Proposed Project would commit the City to these flows regardless of the outcomes of these processes.

Further, in order to take advantage of excess streamflow when available in the system, the Proposed Project includes a modification of the maximum diversion rates of the Felton permits to replace the current 20 cfs diversion rate constraint with a limit that relies on implementation of the Agreed Flows without increasing the total authorized monthly diversion amount.

*Place of Use*

The Proposed Project would expand the POUs of both the City's pre-1914 and post-1914 water rights. This would align the POUs of the City's rights and expand those authorized POUs to include the service areas of the Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and Central Water District.

*Diversion Methods and Points*

The Proposed Project would result in explicit authorization of direct diversion as a method of diversion under the City's Newell Creek license and Felton permits to complement the existing stated right to divert to storage in Loch Lomond Reservoir for later beneficial use. The Proposed Project would also include authorization of the Tait Street Diversion to be added as a point of diversion to the Felton Permits and of the Felton Diversion to be added as a point of diversion to the Tait Licenses.

*Extension of Time*

The Proposed Project would extend the existing time for the City to fully utilize the 3,000 afy diversion provided under the Felton Permits for an additional 25 years.

## Programmatic Components

The Programmatic Components of the Proposed Project would include potential future activities that may occur after the City water rights are modified.

Because these activities are considered to be foreseeable as a logical part in a chain of contemplated actions, but the full physical extent and timing of these improvements is not known at this time, these activities will be addressed in the EIR at a programmatic level per CEQA Guidelines 15168. Some of these actions may be undertaken in conjunction with surrounding districts and some may be undertaken solely by the City.

*Foreseeable Activities*

Felton Diversion Fish Passage Improvements: Fish passage improvements at the Felton Diversion (Felton Diversion Fish Passage Improvements) would address concerns raised by CDFW and NMFS. These improvements may include screen replacement, installation of a traveling brush system, and construction of a continuous downstream outmigration bypass route. These improvements would be designed to be protective of City water rights while improving passage for coho salmon and steelhead.

Interties: New or improved interties between the water systems of the City and of neighboring water agencies may be needed to facilitate future projects that may be developed once City water rights are modified. Neighboring water agencies include Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and Central Water District. Because no new interties or intertie improvements are currently planned, the number, location, and design cannot be known at this time.

Public Agencies Whose Approval or Review Is Required for Project Components

- State Water Resources Control Board
- City of Santa Cruz

Public Agencies Whose Approval or Review May be Required for Programmatic Components

- U.S. Army Corps of Engineers
- Regional Water Quality Control Board
- California Department of Fish and Wildlife
- City of Santa Cruz
- Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and/or Central Water District

## II. ENVIRONMENTAL SETTING

The City's water service area is located between the foothills of the Santa Cruz Mountains and the shoreline of Monterey Bay and is bounded in a number of areas by State and City-owned parks and open space lands (Santa Cruz County, 1994). The service area is characterized by mild winters and summers. Average minimum temperatures in Santa Cruz range from approximately 39°F to 51°F and average maximum temperatures range from approximately 60°F to 76°F (WRCC, 2016). Rainfall mostly occurs during the months of October through April, with average annual rainfall of approximately 30 inches. Between 2012 and 2015, the State of California experienced its driest years on record and in 2014, Governor Jerry Brown declared a statewide drought emergency (PPIC, 2015). The City's water service area is isolated from the state water service system, but has experienced similar shortages.

## III. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by the Proposed Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

| | | | | | |
|---|---|---|---|---|---|
| | Aesthetics | | Agricultural & Forest Resources | ✓ | Air Quality |
| ✓ | Biological Resources | ✓ | Cultural Resources & Tribal Cultural Resources | ✓ | Geology / Soils |
| ✓ | Greenhouse Gas Emissions | ✓ | Hazards & Hazardous Materials | ✓ | Hydrology / Water Quality |
| ✓ | Land Use / Planning | | Mineral Resources | ✓ | Noise |
| ✓ | Population / Housing | ✓ | Public Services | | Recreation |
| ✓ | Transportation / Traffic | ✓ | Utilities/Service Systems | ✓ | Mandatory Findings of Significance |

## IV. DETERMINATION

This determination is made on the basis of the evaluation detailed in the checklist on the following pages.

| On the basis of this initial evaluation: | |
|---|---|
| I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. | ☐ |
| I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared. | ☐ |
| I find that the Proposed Project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required. | ☒ |
| I find that the Proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. | ☐ |
| I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required. | ☐ |

Signature: Rosemary Menard Date: 10/10/2018

Printed Name: Rosemary Menard For: Santa Cruz Water Dept

## V. ENVIRONMENTAL CHECKLIST AND RESPONSES

This section includes the environmental checklist and explanations of the responses to provide information in support of the decision to prepare an EIR. Appendix G of the CEQA Guidelines is a sample Initial Study checklist that provides guidance for determining the significance of project impacts. This checklist and guidelines used here require that the physical changes in the environment that could be caused by a proposed project be evaluated based on factual evidence, reasonable assumptions supported by facts, and expert opinion based on facts.

### 1. Aesthetics.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **1. AESTHETICS. Would the project:** | | | | |
| a) Have a substantial adverse effect on a scenic vista? | ☐ | ☐ | ☐ | ☒ |
| b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway? | ☐ | ☐ | ☐ | ☒ |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings? | ☐ | ☐ | ☐ | ☒ |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | ☐ | ☐ | ☐ | ☒ |

(a-d) The Project Components of the Proposed Project would maintain visual conditions similar to existing conditions. The same is true for Programmatic Components' reasonably foreseeable construction, as most construction would likely be within existing rights of way (e.g., roads) and facilities and because surface disturbances would be restored when underground facilities are fully installed. The Proposed Project would not adversely affect a scenic vista, substantially damage scenic resources, degrade the existing visual character or quality of the Project Component sites and their surroundings, or create a new source of light or glare. Intertie components are anticipated to be located underground within existing linear corridors, while the Felton Diversion Fish Passage Improvements would be located on existing structures. There would be no impact. Therefore, this issue will not be addressed in the EIR.

## 2. Agriculture and Forest Resources.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **2. AGRICULTURE AND FOREST RESOURCES. Would the project:** | | | | |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☐ | ☒ |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | ☐ | ☐ | ☐ | ☒ |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |
| e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☒ |

(a-e) Santa Cruz County and the existing and proposed water service area contain prime and other agricultural land and forest resources. Modification of existing water rights included in the Project Components of the Proposed Project would not result in impacts related to agriculture and forestlands. Implementation of the Program Components of the Proposed Project may involve future implementation of the Felton Diversion Fish Passage Improvements and construction of intertie connections (Programmatic Components of the Proposed Project). These Programmatic Components would not convert agricultural land or forest resources to other uses and would not require rezoning of the land as they are anticipated to be primarily within existing facilities or roadways and utility rights of way. Construction would be temporary in nature and in most cases be located within or adjacent to existing facilities and disturbed corridors. Thus, there would be no impact. Therefore, this issue will not be addressed in the EIR.

## 3. Air Quality.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **3. AIR QUALITY. Would the project:** | | | | |
| a) Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ☐ | ☒ | ☐ |
| b) Violate any air quality standard or contribute to an existing or projected air quality violation? | ☐ | ☐ | ☐ | ☒ |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | ☐ | ☐ | ☒ | ☐ |
| d) Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ☐ | ☒ |
| e) Create objectionable odors affecting a substantial number of people? | ☐ | ☐ | ☐ | ☒ |

(a) In 1991, the Monterey Bay Unified Air Pollution Control District (MBUAPCD), now named the Monterey Bay Air Resources District (MBARD), adopted the *Air Quality Management Plan* (AQMP) for the Monterey Bay region in response to the California Clean Air Act of 1988, which established specific planning requirements to meet ozone standards. The MBARD has updated the AQMP seven times. The most recent update to the AQMP (2012-2015), adopted in 2017, builds on and updates information developed in past AQMPs. The primary elements from the 2012 AQMP updated in the 2017 revision include the air quality trends analysis, emission inventory, and mobile source programs (MBARD, 2017). In addition to the AQMP, MBARD released two implementation plans, including an attainment plan for particulate matter in December of 2005 as well as a maintenance plan for ozone in March of 2007. The MBARD has not adopted CEQA significance thresholds.

The modification of the City's existing water rights would not result in direct emissions of criteria pollutants, because the Proposed Project would not incorporate any emission sources (i.e. construction equipment, generators, mobile, or point sources). However, the proposed modifications may result in water system operational changes that involve changes in pumping regimes. Also, Programmatic Components of the Proposed Project involve minor construction activity that would result in emissions. Although emission levels are anticipated to be less than significant, this issue will be addressed in the Draft EIR.

(b) To protect public health, both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards of maximum levels of ambient (background) air pollutants that are considered safe, with an adequate margin of safety to protect public health and welfare. The National Ambient Air

Quality Standards (NAAQS) address six criteria pollutants, including ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, fine particulate matter ($PM_{10}$ and $PM_{2.5}$, which refer to particles less than 10 microns and 2.5 microns, respectively), and lead. California ambient air quality standards (CAAQS), which are generally more stringent than federal standards, apply to the same pollutants as federal standards, but also include sulfate, hydrogen sulfide, and vinyl chloride. The Proposed Project is located in the North Central Coast Air Basin (NCCAB) and is under the jurisdiction of the MBARD. The MBARD includes Santa Cruz, Monterey, and San Benito Counties. The NCCAB is currently in attainment or unclassified for all federal criteria pollutant standards. The basin is designated non-attainment transitional for the state ozone standard, non-attainment for the state $PM_{10}$ standards, and is in attainment or unclassified for all other state standards. The MBARD's 2017 AQMP identifies a continued trend of declining ozone emissions in the air basin primarily related to more stringent and protective emissions standards for automobiles, power plants, and other sources of ozone precursors (MBARD, 2017).

The modification of existing water rights would not result in direct emissions of criteria pollutants. However, implementation of the Programmatic Components of the Proposed Project may involve future construction of the Felton Diversion Fish Passage Improvements as well as improvements to or construction of intertie connections (Programmatic Components), which is addressed in Question (c). Because the Proposed Project would not directly emit pollutants and because future construction activities would be temporary and likely would result in only very minor amounts of air pollution, the Proposed Project would not violate any air quality standard or contribute to an existing or projected air quality violation. Therefore this issue will not be addressed in the EIR.

(c) Past, present, and future development projects affect regional air quality under cumulatively considerable conditions. Should individual emissions of a project contribute toward exceedance of the CAAQS or NAAQS, the project's cumulatively considerable impact on air quality would be considered significant. The USEPA considers a region's past, present, and future emission levels in developing federal attainment designations for criteria pollutants. Long-term implementation and operation of the Project and Programmatic Components of the Proposed Project may result in direct emissions from future construction emissions if expansion of the Felton Diversion occurs and indirect emissions from increased use of electricity powered pumps. Given the size of the Felton Diversion Fish Passage Improvements, direct construction emissions and indirect pump emissions would not result in a cumulatively considerable net increase of ozone precursors or $PM_{10}$ or cause a violation of any air quality standard. Although it is anticipated that the cumulative effect of the Proposed Project would not result in the emission of cumulatively substantial criteria pollutants, this issue will be addressed in the EIR.

(d) The modification of existing water rights for the Project Components of the Proposed Project would not directly expose sensitive receptors to substantial pollutant concentrations. However, implementation of the Programmatic Components of the Proposed Project may result in future construction of the Felton Diversion Fish Passage Improvements and intertie connections.

Due to the size of future construction projects and the short time of construction, the Proposed Project's potential future activities would not expose sensitive receptors to substantial concentrations of air pollutants. There would be no impact. Therefore this issue will not be addressed in the EIR.

(e) The Proposed Project would not result in changes to the types of permitted commercial and residential uses acceptable to the area. This is governed by the appropriate general plans which are not impacted by the Project or Programmatic Components of the Proposed Project. Existing permitted uses within the region of the Proposed Project typically would not create objectionable odors. However, implementation of the potential future Programmatic Components of the Proposed Project may result in construction that may cause odor in the vicinity of sensitive receptors. Construction activity odors, however, generally do not travel beyond the boundaries of the construction site. Heavy duty construction activities are not anticipated to occur. Construction is temporary in nature. Construction would generally occur during work hours when sensitive receptors are not in the vicinity. For these reasons, the Proposed Project's potential construction activities would not create objectionable odors affecting a substantial number of people. There would be no impact. Therefore this issue will not be addressed in the EIR.

## 4. Biological Resources.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **4. BIOLOGICAL RESOURCES. Would the project:** | | | | |
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special- status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | ☐ | ☒ | ☐ | ☐ |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☒ | ☐ |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | ☐ | ☐ | ☒ | ☐ |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | ☐ | ☒ | ☐ | ☐ |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | ☐ | ☐ | ☒ | ☐ |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | ☐ | ☐ | ☒ | ☐ |

(a) The North Coast streams provide habitat for federally protected Central California Coast steelhead trout (Oncorhynchus mykiss) and/or Central California Coast coho salmon (Oncorhynchus kisutch). Both Liddell and Laguna Creek supports steelhead, but are not considered potential recovery habitat for coho salmon under the federal Central Coast Coho Recovery Plan (NMFS, 2012). However, coho salmon have been documented in the Laguna Creek recently and suitable habitat is present (2nd Nature, 2006, Berry, C., Bean, E., Basset, R., Martinez-McKinney, J., Retford, N., and Hagar, J. 2018). Reggiardo Creek is a first order tributary to Laguna Creek. Majors Creek supports populations of steelhead but is not considered potential recovery habitat for coho salmon under the federal Central Coast Coho Recovery Plan.

Natural and man-made fish barriers in the San Lorenzo River main stem may limit access of steelhead and coho salmon to portions of the San Lorenzo watershed, especially during dry years, however the San Lorenzo River is considered a high recovery priority for both species.

The Project Components of the Proposed Project includes the modification of the City's pre-1914 and post-1914 water rights, permits, and licenses to improve conditions for federally protected steelhead and/or coho salmon. Modifications would involve applying Agreed Flows to those rights as negotiated between the City, the CDFW, and NMFS in the HCP process. The Agreed Flows would be included in the terms and conditions of any Lake and Streambed Alteration Agreement issued by CDFW for the HCP. No change is proposed to the authorized volume of water under the City's existing water rights; however, changes in stream flows would result in impacts (likely beneficial) on aquatic special-status species. This will be further discussed in the EIR.

Additionally, implementation of the Programmatic Components of the Proposed Project would include future construction of the Felton Diversion Fish Passage Improvements and construction of or improvements to intertie connections to adjacent water districts. These potential temporary impacts will be addressed at a programmatic level in the EIR.

(b-c) The Santa Cruz County General Plan defines sensitive habitat to include "All lakes, wetlands, estuaries, lagoons, streams, and rivers." The Project Components of the Proposed Project include modification of existing water rights, and implementation of the Programmatic Components and may involve future construction of the Felton Diversion Fish Passage Improvements and construction of or improvements to intertie connections. These impacts will be addressed in the EIR.

(d) The Felton Diversion is located on the San Lorenzo River. When the facility is being operated, typically during the wet season, water from Felton is diverted into a screened intake sump and pumped via pipeline to the Felton Booster Station located near Graham Hill Road. Water is then pumped via pipeline from the Felton Booster Station to Loch Lomond Reservoir for storage and later use.

The Project Components of the Proposed Project include the modification of the City's pre-1914 rights and post-1914 permits and licenses by adding the Agreed Flows as minimum streamflow requirements to improve conditions for listed coho salmon and steelhead. The Agreed Flows would be part of the terms and conditions of any Lake and Streambed Alteration Agreement issued by CDFW for the HCP. This may result in physical changes to the environment and would likely improve current movement of fish or wildlife species and should improve the habitat for other life stages of listed fish species found in the affected streams. This will be discussed further in the EIR.

(e-f) The modification of the City's existing water rights via the Proposed Project would result in operational changes to the City's water system, and may eventually result in the construction of the Felton Diversion Fish Passage Improvements and construction of or improvements to intertie connections, which are the project's Programmatic Components.

Implementation of the Project or Programmatic Components of the Proposed Project is not anticipated to result in conflicts with local policies or ordinances protecting biological resources, adopted habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans.  This, however, will be addressed in the EIR.

Additionally, the Agreed Flows would be included in the terms and conditions of any Streambed Alteration Agreement issued by CDFW for HCP – related activities, that may result in physical changes to the environment that could therefore potentially conflict with local policies or ordinances protecting biological resources, adopted habitat conservation plans, natural community conservation plans, or other approved habitat conservation plans. However, implementation of the Agreed Flows would likely improve current movement of fish or wildlife species and should improve the habitat for other life stages of fish species found in the affected streams.  This will be discussed further in the EIR.

## 5. Cultural Resources.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **5. CULTURAL RESOURCES AND TRIBAL CULTURAL RESOURCES. Would the project:** | | | | |
| a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? | ☐ | ☒ | ☐ | ☐ |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? | ☐ | ☒ | ☐ | ☐ |
| c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | ☐ | ☒ | ☐ | ☐ |
| d) Disturb any human remains, including those interred outside of formal cemeteries? | ☐ | ☒ | ☐ | ☐ |
| e) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | | | | |
| i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)? | ☐ | ☐ | ☒ | ☐ |
| ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California Native American tribe? | ☐ | ☐ | ☒ | ☐ |

(a-d) Modification of existing water rights included in the Project Components of the Proposed Project would not result in impacts related to cultural resources. However, the Programmatic Components of the Proposed Project may result in impacts to cultural or paleontological resources, as implementation may include future construction of the Felton Diversion Fish Passage Improvements and construction of or improvement to intertie connections. This construction could potentially affect cultural or historic resources. These impacts will be addressed at a programmatic level in the EIR.

(e) State Assembly Bill (AB) 52, effective July 1, 2015, recognizes that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities.

The law established a new category of resources called "tribal cultural resources" that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation.

Public Resources Code section 21074 defines a "tribal cultural resource" as either:

(1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Nature American tribe that is either listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or
(2) A resource determined by the lead agency chooses, in its discretion and supported by substantial evidence, to treat as a tribal cultural resource.

Public Resources Code section 21084.2 establishes that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." The Public Resources Code requires the lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a Proposed Project. Native American tribes have not contacted the City to request consultation. Construction associated with Programmatic Components of the Proposed Project is of limited scope and would primarily occur in previously disturbed soils. For these reasons, less than significant impacts to tribal cultural resources are anticipated, however appropriate notifications will be conducted per AB 52.

## 6. Geology and Soils.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **6. GEOLOGY AND SOILS. Would the project:** | | | | |
| a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:<br>i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.<br>ii. Strong seismic ground shaking?<br>iii. Seismic-related ground failure, including liquefaction?<br>iv. Landslides? | ☐ | ☐ | ☒ | ☐ |
| b) Result in substantial soil erosion or the loss of topsoil? | ☐ | ☒ | ☐ | ☐ |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? | ☐ | ☒ | ☐ | ☐ |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? | ☐ | ☒ | ☐ | ☐ |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | ☐ | ☐ | ☐ | ☒ |

(a) The San Andreas Fault is located approximately 11.5 miles northeast of the City. The San Gregorio Fault is located approximately nine miles southwest of the City. There are no active fault zones or risks of fault rupture within City limits (City of Santa Cruz, 2012). The modification of existing water rights for the Project Components of the Proposed Project would not involve the development of new structures, or place people or structures at risk or result in impacts related to seismic ground shaking and liquefaction. The Programmatic Components of the Proposed Project would be primarily underground and subject to detailed code requirements intended to allow pipelines and other infrastructure to withstand major earthquakes. Therefore, potential impacts due to seismic ground shaking, liquefaction, and landslide would be less than significant, and this issue will not be addressed in the EIR.

(b) The modification of existing water rights through the Project Components of the Proposed Project would not result in impacts from substantial soil erosion or loss of topsoil.

However, implementation of the Programmatic Components of the Proposed Project may include future construction of the Felton Diversion Fish Passage Improvements and construction of or improvement to intertie connections. Soil disturbance from this construction has the potential to lead to erosion. These impacts will be addressed at a programmatic level in the EIR.

(c) The Programmatic Components of the Proposed Project may include future construction of the Felton Diversion Fish Passage Improvements and intertie connections. This construction could be located on unstable geologic units or soil that may increase the potential for landslides, lateral spreading, subsidence, liquefaction or collapse. These impacts will be addressed at a programmatic level in the EIR.

(d) The Programmatic Components of the Proposed Project may result in future construction of the Felton Diversion Fish Passage Improvements and intertie connections. This construction could be located on expansive soils with high shrink-swell potential. These impacts will be addressed at a programmatic level in the EIR.

(e) The Project or Programmatic Components of the Proposed Project do not involve the construction or modification of septic tanks or alternative wastewater disposal systems. There would be no impact. Therefore this issue will not be addressed in the EIR.

## 7. Greenhouse Gas Emissions.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **7. GREENHOUSE GAS EMISSIONS. Would the project:** | | | | |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | ☐ | ☒ | ☐ | ☐ |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ☐ | ☒ |

(a) Climate change refers to significant changes in measures of climate over a period of time, such as average temperature, precipitation, or wind patterns. Climate change may result from natural processes and human activities that change the composition of the atmosphere and alter the surface and features of land. The City's *General Plan 2030* includes goals, policies and actions on climate change, including reducing community-wide greenhouse gas (GHG) emissions by 30 percent by 2020, reducing 80 percent by 2050 (compared to 1990 levels), and for new buildings to be emissions neutral by 2030 (City of Santa Cruz, 2012a). In June 2012, the City also adopted a Climate Action Plan (CAP) that outlines the actions the City will take over the next ten years to reduce GHGs by 30 percent. The CAP provides City emissions inventories and identifies an emissions reduction target for the year 2020.

Potentially significant GHG impacts would include emissions from Programmatic Component construction activities and Proposed Project operational changes involving pumping of water. The increase in Project-related GHG emissions would be relatively small, and with the reductions in the City's GHG emissions associated with the implementation of the City's CAP, the City's overall GHG emissions would decrease. Although it is anticipated that this impact would be less than significant, this issue will be evaluated at both a Project and Programmatic level in the EIR.

(b) As discussed above in relation to Question (a), the Proposed Project does not conflict with any plans, policies, or regulations adopted for the purpose of reducing emissions of greenhouse gases. Therefore, this issue will not be addressed in the EIR.

## 8. Hazards and Hazardous Materials.

| ENVIRONMENTAL IMPACTS Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **8. HAZARDS AND HAZARDOUS MATERIALS. Would the project:** | | | | |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | ☐ | ☒ | ☐ | ☐ |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | ☐ | ☒ | ☐ | ☐ |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school? | ☐ | ☒ | ☐ | ☐ |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☒ | ☐ | ☐ |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ☒ |
| f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ☒ |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☒ | ☐ | ☐ |
| h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | ☐ | ☐ | ☒ | ☐ |

(a-b) The Project Components of the Proposed Project would result in operational changes to the City's water system, however these operational changes would have no effect on the routine transport, use, or disposal of hazardous materials, and therefore these issues as they relate to the Project Components will not be addressed in the EIR. The Programmatic Components of the Proposed Project may include future construction of the Felton Diversion Fish Passage Improvements and intertie connections. Hazardous materials used during construction typically include common petroleum products. When properly used, stored, transported and disposed of, these products do not present a significant hazard to the public or environment. This issue will be addressed at a programmatic level in the EIR.

(c) The Project Components of the Proposed Project would result in operational changes to the City's water system, however these operational changes would not involve hazardous materials near and existing or proposed school, and therefore hazardous materials issues as they relate to the Project Components will not be addressed in the EIR. The Programmatic Components of the Proposed Project may result in future construction of the Felton Diversion Fish Passage Improvements and intertie connections. As the locations and specifics of construction have not yet been identified, and as there may be some hazardous substances (typically petroleum products) in use during construction, impacts will be addressed at a programmatic level in the EIR.

(d) The Project Components of the Proposed Project would result in operational changes to the City's water system, however these operational changes would not involve known hazardous materials sites, and therefore hazardous materials issues as they relate to the Project Components will not be addressed in the EIR. The Programmatic Components of the Proposed Project may result in construction of the Felton Diversion Fish Passage Improvements and intertie connections, but the locations and specifics of construction are not yet known. This issue will be addressed at a programmatic level in the EIR.

(e-f) The Project Components of the Proposed Project would result in operational changes to the City's water system, however these operational changes would not involve local airports, and therefore hazardous materials issues as they relate to the Project Components will not be addressed in the EIR. Santa Cruz County currently has one public use airport, the Watsonville Municipal Airport, located within the City of Watsonville. There are currently two private airports, Las Trancas Airport and Bonny Doon Airport, as well as several heliports located within the County. No significant construction associated with the Programmatic Components of the Proposed Project would occur in the vicinity of these airports; therefore, this issue will not be addressed in the EIR.

(g) The Project Components of the Proposed Project would result in operational changes to the City's water system, however these operational changes would not affect emergency services, and therefore hazardous materials issues as they relate to the Project Components will not be addressed in the EIR. Future construction associated with the Programmatic Components of the Proposed Project would be relatively minor but may cause temporary road closures which could block emergency vehicles temporarily.

Although the construction is not anticipated to completely block an emergency response plan or emergency evacuation plan, the potential exists that there may be temporary hazards to the public or to the environment. Therefore, this issue will be addressed at a programmatic level in the EIR.

(h) Cal Fire has mapped the fire hazard severity in several locations throughout the County as moderate or high (Cal Fire, 2018). However, the modification of existing water rights through the Proposed Project would not result in an increase in wildland fires, nor would it increase exposure of people or structures to fire. Programmatic Components may result in future construction of fish passage improvements and intertie connections. Risk of fire would be minimized at construction sites via the use of standard practices such as clearing construction areas of combustible material and ensuring spark arresters are in good working order during project construction. There would be a less than significant impact, and therefore this issue will not be addressed in the EIR.

## 9. **Hydrology and Water Quality**.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **9. HYDROLOGY AND WATER QUALITY. Would the project:** | | | | |
| a) Violate any water quality standards or waste discharge requirements? | ☐ | ☒ | ☐ | ☐ |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level (e.g., the production rate of pre- existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | ☐ | ☒ | ☐ | ☐ |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? | ☐ | ☒ | ☐ | ☐ |
| d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site? | ☐ | ☒ | ☐ | ☐ |
| e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff? | ☐ | ☒ | ☐ | ☐ |
| f) Otherwise substantially degrade water quality? | ☐ | ☐ | ☐ | ☒ |
| g) Place housing within a 100-year flood-hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? | ☐ | ☐ | ☐ | ☒ |
| h) Place within a 100-year flood-hazard area structures which would impede or redirect flood flows? | ☐ | ☒ | ☐ | ☐ |
| i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? | ☐ | ☒ | ☐ | ☐ |
| j) Inundation by seiche, tsunami, or mudflow? | ☐ | ☐ | ☒ | ☐ |

(a) The Project Components of the Proposed Project would result in operational changes to the City's water system, however these operational changes would not affect water quality standards or waste discharge, and therefore these issues as they relate to the Project Components will not be addressed in the EIR.

The Programmatic Components of the Proposed Project may result in future construction. Impacts related to sedimentation in watercourses and other potential water quality impacts from future construction will be addressed at a programmatic level in the EIR.

(b) The Proposed Project area overlays portions of the Santa Cruz Mid-County and Santa Margarita groundwater basins. Project Components of the Proposed Project consist of changes to the City's water rights which may make water available through conjunctive use to recharge, both to allow recovery of these basins and enable potential extraction of recharged water. This issue will be further addressed in the EIR. The Programmatic Components of the Proposed Project include potential future fish passage and intertie improvements. This construction would be relatively shallow and would not impact groundwater. Therefore, potential groundwater impacts from these Programmatic Components will not be addressed in the EIR.

(c-d) The Project Components of the Proposed Project would alter flow patterns in the San Lorenzo River with beneficial impacts to fisheries and aquatic ecosystems. Also, construction of diversion improvements and interties with neighboring districts considered in the Programmatic Components could lead to erosion or siltation. Therefore, this will be addressed in the EIR.

(e) Future construction of the Felton Fish Passage Improvements and interties considered in the Programmatic Components have the potential to increase polluted runoff. While it is anticipated that standard management practices would be in place during construction to reduce these impacts, this will be analyzed at a programmatic level in the EIR.

(f) The Project and Programmatic Components of the Proposed Project would not otherwise substantially degrade water quality beyond the impacts discussed above in relation to Questions (a), (c), and (e). Therefore, no impact would occur.

(g) The Project and Programmatic Components Proposed Project would not result in the development of housing. No impact would occur.

(h) The Programmatic Components of the Proposed Project would result in Felton Diversion Fish Passage Improvements, within and adjacent to the San Lorenzo River. These improvements would be designed such that they do not adversely affect flood flows. This issue will be addressed at a programmatic level in the EIR.

(i) The Programmatic Components of the Proposed Project would result in improvements to the Felton Diversion Fish Passage Improvements, within and adjacent to the San Lorenzo River. These improvements would be designed such that they do not cause a flood hazard. This issue will be addressed at a programmatic level in the EIR.

(j) A portion of the City's water system is within a tsunami zone, and stream flows potentially affected by the Proposed Project would extend to the Pacific Ocean. Nevertheless, operational changes to the water system associated with the Project Components of the Proposed Project would not put people at risk due to seiche, tsunamis or mudflows.

The Programmatic Components (fish passage and intertie improvements) of the Proposed Project would not result in structures that would put people at risk due to a seiche, mudflow or tsunami. These components of the Proposed Project would be designed to avoid or withstand such hazards. Therefore, this issue will not be addressed at a programmatic level in the EIR.

## 10. Land Use and Planning.

| ENVIRONMENTAL IMPACTS Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **10. LAND USE AND PLANNING. Would the project:** | | | | |
| a) Physically divide an established community? | ☐ | ☐ | ☐ | ☒ |
| b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☒ | ☐ | ☐ |
| c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan? | ☐ | ☐ | ☒ | ☐ |

(a) The Project and Programmatic Components of the Proposed Project would not result in the development of a physical barrier that would divide an established community. There would be no impacts and therefore this issue will not be addressed in the EIR.

(b) City General Plan goals include ensuring fisheries conservation strategies address and protect water storage, drinking water source quality, and water system flexibility, as well as protect environmental resources (City of Santa Cruz, 2012). County General Plan Objective 5.3.4 requires new water diversions on anadromous fish streams to protect fish populations and provide adequate flow levels for successful fish production (Santa Cruz County, 1994). County General Plan Objectives 5.6.1 and 5.6.3 require implementation of minimum stream flows and maintenance of instream and riparian habitat to protect anadromous fish species. The Proposed Project includes implementation of Agreed Flows and the Felton Fish Passage Diversion Facility Improvements to benefit anadromous fish species while facilitating water system flexibility.

Accordingly, the modification of existing water rights through the Project Components of the Proposed Project is not anticipated to conflict with general plan goals or policies. Implementation of the Proposed Project would result in changes to the City's water right POUs and would require additional analyses of City and County General Plans Goals and Policies and other related plans to ensure consistency. Therefore, further analysis will be provided in the EIR.

(c) The City is working with CDFW and NMFS to develop a HCP under a separate process from this Proposed Project. Implementation of the Project or Programmatic Components of the Proposed Project is not anticipated to result in conflicts with adopted habitat conservation plans or natural community conservation plans. This, however, will be addressed in the EIR.

## 11. Mineral Resources

| ENVIRONMENTAL IMPACTS Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **11. MINERAL RESOURCES. Would the project:** | | | | |
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | ☐ | ☐ | ☐ | ☒ |
| b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? | ☐ | ☐ | ☐ | ☒ |

(a-b) The Project and Programmatic Components of the Proposed Project would not result in impacts related to mineral resources. The minor future construction associated with the Programmatic Components would not preclude the development of any mineral resources. Therefore, this issue will not be addressed in the EIR.

## 12. Noise

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **12. NOISE: Would the project:** | | | | |
| a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies? | ☐ | ☒ | ☐ | ☐ |
| b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels? | ☐ | ☒ | ☐ | ☐ |
| c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | ☐ | ☐ | ☒ | ☐ |
| d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | ☐ | ☒ | ☐ | ☐ |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ☒ |
| f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ☒ |

(a) The modification of existing water rights for the Proposed Project would not result in generation of noise levels in excess of standards. However, the Programmatic Components would include future construction of the Felton Diversion Fish Passage Improvements and intertie connections. As the specific locations of reasonably foreseeable construction has not yet been identified, it is unknown if the project would cause noise impacts to the public or to the environment as a result of construction; therefore, impacts will be addressed at a programmatic level in the EIR.

(b) The modification of existing water rights for the Proposed Project would not result in generation of ground borne vibration levels in excess of standards. However, the Programmatic Components would include the Felton Diversion Fish Passage Improvements and intertie connections. As the specific locations of reasonably foreseeable construction has not yet been identified, it is unknown if the project would cause vibration impacts to the public or to the environment as a result of construction. Therefore, impacts will be addressed at a programmatic level in the EIR.

(c) The modification of existing water rights as part of the Proposed Project would not result in an increase in ambient noise levels, however operational changes at the Felton Diversion may result in more frequent pumping hence longer periods of noise-producing operations. This increase in frequency would be minimal and since noise volume would not increase, the impact would be less than significant. Construction of Programmatic Components (fish passage and intertie improvements) would generate noise temporarily during construction work hours and would not result in permanent noise impacts. Therefore, permanent noise impacts from Programmatic Components will not be addressed in the EIR.

(d) While modification of existing water rights would not create a temporary increase of noise in the project vicinity, construction of the Programmatic Components may generate noise of a temporary nature. Therefore these impacts will be addressed at a programmatic level.

(e-f) Santa Cruz County currently has one public use airport, the Watsonville Municipal Airport, located within the City of Watsonville. There are currently two private airports, Las Trancas Airport and Bonny Doon Airport, as well as several heliports located within the County. No significant construction associated with the Project or Programmatic Components of the Proposed Project would occur in the vicinity of these airports. The Proposed Project would not expose people in the vicinity of the airport to excessive noise levels. Therefore, this issue will not be addressed in the EIR.

## 13. Population and Housing

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **13. POPULATION AND HOUSING. Would the project:** | | | | |
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | ☐ | ☐ | ☒ | ☐ |
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☒ |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☒ |

(a) Population and housing growth within the region is influenced by limited developable land, employment opportunities, traffic patterns, and housing costs. Growth within the region is occurring consistent with applicable City and County General Plans. The Proposed Project would implement the Agreed Flows and is needed to address existing drought-year deficiencies and meet existing demands. The Proposed Project would not increase the City's overall water supply to accommodate growth, but would rather improve the flexibility of the City's water supply by facilitating operational efficiency.

Although impacts are anticipated to be less than significant, this issue will be addressed further in the EIR.

(b-c) The Programmatic Components of the Proposed Project would involve only future minor construction projects that would not involve or affect housing. This issue will not be addressed in the EIR.

## 14. Public Services

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **14. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physical altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:** | | | | |
| a) Fire protection? | ☐ | ☒ | ☐ | ☐ |
| b) Police protection? | ☐ | ☒ | ☐ | ☐ |
| c) Schools? | ☐ | ☐ | ☐ | ☒ |
| d) Parks? | ☐ | ☐ | ☐ | ☒ |
| e) Other public facilities? | ☐ | ☐ | ☐ | ☒ |

(a) While the modification of water rights is not anticipated to result in impacts related to fire protection services, construction of intertie connections may result in future construction within roadways. This construction could temporarily affect fire response due to temporary land closures. This issue will therefore be addressed at a programmatic level in the EIR.

(b) While the modification of water rights is not anticipated to result in impacts related to police services, construction of intertie connections may result in future construction within roadways. This construction could temporarily affect police response due to temporary lane closures. This issue will therefore be addressed at a programmatic level in the EIR.

(c-e) The modification of existing water rights would not affect schools, parks, or other public facilities as the effects are predominantly related to water system flexibility and in-stream flows. Potential construction associated with Programmatic fish passage and intertie improvements would be within existing developed areas, rights of way, or roadways and therefore would not affect schools, park, or other public facilities beyond those discussed above in Questions (a) and (b). There would be no impact; therefore, this issue will not be addressed in the EIR.

## 15. Recreation

| ENVIRONMENTAL IMPACTS Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **15. RECREATION. Would the project:** | | | | |
| a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | ☐ | ☐ | ☐ | ☒ |
| b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? | ☐ | ☐ | ☒ | ☐ |

(a-b) Santa Cruz offers residents and visitors a wide range of parks, open space, beaches, trails, and recreational opportunities. The City has responsibility for management, maintenance, and operation of several thousand acres of parks and open space land and various community/ recreational facilities including the Loch Lomond Recreation Area, and also oversees development of new parks and improvements within City-owned facilities. In the project area, the San Lorenzo Riverwalk trail provides pedestrian and bicycle access to the multi-use path on the river levee. The Project and Programmatic Components of the Proposed Project do not include activities or construction that would impact recreation, although the changes to the Newell Creek license (License 9848) and the Felton permits (Permits 16123 and 16601) could authorize different operations at Loch Lomond Reservoir. Those different operations might cause some limited fluctuation of the reservoir's water levels. However, these fluctuations would not physically deteriorate or construct/expand recreational facilities. No increased park use would be expected as a result of the Proposed Project, and no construction or expansion of the Loch Lomond Recreational Area (or other parks adjacent to rivers or streams) would occur as a result of the Project. There would be no significant impact; therefore, this issue will not be addressed in the EIR.

## 16. Transportation/Traffic.

| ENVIRONMENTAL IMPACTS<br>Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **16. TRANSPORTATION/TRAFFIC. Would the project:** | | | | |
| a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | ☐ | ☒ | ☐ | ☐ |
| b) Conflict with an applicable congestion management program, including, but not limited to level of service standard and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? | ☐ | ☒ | ☐ | ☐ |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? | ☐ | ☐ | ☐ | ☒ |
| d) Substantially increase hazards due to a design feature (for example, sharp curves or dangerous intersections) or incompatible uses (for example, farm equipment)? | ☐ | ☐ | ☐ | ☒ |
| e) Result in inadequate emergency access? | ☐ | ☒ | ☐ | ☐ |
| f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? | ☐ | ☐ | ☐ | ☒ |

(a-b) The Project Components of the Proposed Project would result in operational changes to the City's water system, however these operational changes would not affect transportation and traffic, and therefore hazardous materials issues as they relate to the Project Components will not be addressed in the EIR. The Programmatic Components of the Proposed Project may result in future construction. Impacts related to traffic congestion, level of service changes, temporary road closures, and other transportation facilities that may be impacted by construction activities will be addressed at a programmatic level in the EIR.

(c) The Project and Programmatic Components of the Proposed Project would not result in direct impacts related to air traffic patterns. Therefore, this will not be analyzed in the EIR.

(d) The Project and Programmatic Components of the Proposed Project would not result in hazards associated with road design. Therefore, this will not be analyzed in the EIR.

(e) The Programmatic Components of the Proposed Project may temporarily affect emergency access. The minor construction that would occur could cause temporary road or lane closures during construction that could impact emergency responders. This issue will be addressed at a programmatic level in the EIR.

(f) The Proposed Project would not conflict with any traffic and transportation policies, plans, or programs for public transit and bike/pedestrian facilities. Future construction activities associated with the Programmatic Components would be small in scope and short in duration and would not decrease the performance or safety of transportation facilities. Therefore, this issue will not be addressed in the EIR.

## 17. Utilities and Service Systems

| ENVIRONMENTAL IMPACTS Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **17. UTILITIES AND SERVICE SYSTEMS. Would the project:** | | | | |
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | ☐ | ☐ | ☐ | ☒ |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction or which could cause significant environmental effects? | ☐ | ☒ | ☐ | ☐ |
| c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | ☐ | ☐ | ☐ | ☒ |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | ☐ | ☐ | ☐ | ☒ |
| e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | ☐ | ☐ | ☐ | ☒ |
| f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | ☐ | ☐ | ☐ | ☒ |
| g) Comply with federal, state, and local statutes and regulations related to solid waste? | ☐ | ☐ | ☐ | ☒ |

(a, c, e-g) The Project and Programmatic Components of the Proposed Project would not result in impacts related to or requiring construction or expansion of wastewater treatment facilities or stormwater facilities.

The Proposed Project would not change wastewater treatment requirements as no additional wastewater would be generated as a result of implementation of the Proposed Project. Further, no additional solid waste would be generated as a result of the Proposed Project, and thus compliance with regulations related to solid waste would not change. While implementation of the Programmatic Components of the Proposed Project would result in future construction, this would be limited to the Felton Diversion Fish Passage Improvements and intertie connections and would not impact wastewater treatment, stormwater facilities, or solid waste generation. There would be no impact. These issues will not be addressed in the EIR.

(b) The Project Components of the Proposed Project would result in operational changes to the City's water system, and would allow the City and possibly neighboring water districts more flexibility in meeting their needs. These changes and associated impacts, if any, will be analyzed in the EIR. No construction of new or expansion of existing water facilities would be required as a result of the Project Components, however fish passage and intertie improvements (Programmatic Components) may be constructed in the future if needed. Potential impacts to utility systems from future Programmatic Components will be addressed in the EIR.

(d) The Project and Programmatic Components of the Proposed Project would not require additional water supply entitlements. The Proposed Project only would involve changes to the City's water supply operations and facilities, which would not change overall demands on the City's water system that could require expanded entitlements. Therefore this issue will not be addressed in the EIR.

## 18. Mandatory Findings of Significance.

| ENVIRONMENTAL IMPACTS Issues (and Supporting Information Sources): | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **18. MANDATORY FINDINGS OF SIGNIFICANCE.** | | | | |
| a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, threatened, or rare species or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☒ | ☐ | ☐ |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects.) | ☐ | ☒ | ☐ | ☐ |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☒ | ☐ | ☐ |

(a) The proposed changes to the City's existing water rights and the minor future construction projects that may result thereafter have the potential to cause limited and temporary degradation of the environment due to construction activities. However, the Proposed Project would not reduce the habitat of a fish species (and would in fact improve the habitat with the Agreed Flows), threaten a plant or animal community, or substantially reduce the number or restrict the range of an endangered, threatened, or rare species. Impacts as a result of construction will be discussed further in the EIR at a programmatic level.

(b) Cumulative impacts will be addressed in the EIR.

(c) An evaluation of environmental effects that would have direct or indirect adverse effects on human beings will be analyzed further in the EIR.

# VI. REFERENCES AND DATA SOURCE LIST

City of Santa Cruz General Plan and EIR:

Adopted June 26, 2012. *General Plan 2030*. Available online at: http://www.cityofsanta-cruz.com/departments/planning-and-community-development/general-plan-2030.

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City of Santa Cruz Adopted Plans:

Adopted August 2016. *2015 Urban Water Management Plan*. Prepared by City of Santa Cruz Water Department.

Adopted 2013. *City of Santa Cruz Local Hazard Mitigation Plan 2012-2017.* Adopted by City Council on February 28, 2006 and certified by the California Coastal Commission on May 9, 2008. *City-wide Creeks and Wetlands Management Plan*.

Adopted June 2012. *Climate Action Plan.* Prepared by City of Santa Cruz Climate Action Team. Available online at http://www.cityofsantacruz.com/home/showdocument-?id=27824.

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Adopted June 24, 2003. San Lorenzo Urban River Plan; A Plan for the San Lorenzo River, Branciforte Creek, and Jessie Street Marsh. Prepared by the City of Santa Cruz San Lorenzo Urban River Plan Task Force, with assistance from the Rivers, Trails and Conservation Assistance Program of the National Park Service. Available online at: http://www.cityofsanta-cruz.com/home/showdocument?id=6415.

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County of Santa Cruz, 2014. Santa Cruz Integrated Regional Water Management Plan. Available online at: http://www.santacruzirwmp.org/plan-update2014/. Accessed August 2018.

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# SCOPING COMMENTS

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NOV 16 2018

In Reply Refer to
AM: A017913 et al

City of Santa Cruz Water Department
c/o Ms. Sarah Easley Perez
212 Locust Street, Suite C
Santa Cruz, CA 95060
seasleyperez@cityofsantacruz.com

Dear Ms. Perez:

NOTICE OF PREPARATION OF ENVIRONMENTAL IMPACT REPORT (EIR) FOR SANTA CRUZ WATER RIGHTS PROJECT

The State Water Resources Control Board (State Water Board), Division of Water Rights (Division) staff has reviewed the Notice of Preparation and Initial Study (IS/NOP) for the City of Santa Cruz (City) Water Rights Project and appreciates the opportunity to comment as a CEQA Responsible Agency for approval of the water right changes. Pursuant to a November 8, 2018 email, the City agreed to provide the Division until Friday November 16, 2018 to submit a comment letter on the IS/NOP.

**Water Rights Background**

The City proposes numerous changes to its existing post-1914 water rights: License 9847 (A017913) on Newell Creek for the Loch Lomond Reservoir, Permit 16123 (A022318) and Permit 16601 (A023710) on the San Lorenzo River for the Felton Diversion Facility, License 1553 (A004017) and License 7200 (A005215) on the San Lorenzo River for the Tait Street Diversion Facility, and pre-1914 water right claims on Liddle Creek, Laguna Creek, and Majors Creek. The City has pending water rights petitions on the subject rights for the Loch Lomond Reservoir and the Felton Diversion Facility, filed in 2006, but in further consideration has proposed to cancel the existing petitions and file new ones in the near future. The new proposed changes include: 1) addition of direct diversion as a method of diversion at the Newell Creek Diversion Dam under License 9847 and the Felton Diversion Facility under Permits 16123 and 16601; 2) addition of the Tait Street Diversion Facility as additional points of diversion to the Felton Diversion Permits and addition of the Felton Diversion Facility as an additional point of diversion to the Tait Street Diversion Licenses; 3) addition of a 30-day average rate of diversion to the Felton Diversion Permits; 4) expansion of the place of use of all existing post-1914 rights to include service areas of neighboring water agencies; 5) addition of environmental flow requirements for purposes of protecting Central California Coast Coho salmon and steelhead; and 6) extension of time to put the water to full beneficial use under Permits 16123 and 16601 for an additional 37 years.

The scope of the Division's comments is limited to the portions of the IS/NOP associated with the proposed changes to the post-1914 water rights which are subject to approval by the State Water Board. Division comments are as follows:

**Comment 1: Minimum Stream Flow Requirements (Agreed Flows)**
The IS/NOP does not specify how the City developed the minimum stream flow requirements (Agreed Flows) with the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) as part of the Habitat Conservation Plan development. The EIR should include details of the scientific basis or studies completed for determining an appropriate flow regime that would be protective of Central California Coast steelhead, Central California Coast salmon, and any other applicable fish and wildlife species that may be affected by the flows. Moreover, page 3 of the Initial Study indicates both CDFW and NMFS "tentatively" agreed to the flow requirements. The most recent status of fishery agency support of the Agreed Flows shall be clarified in the EIR. The baseline instream conditions should be clearly described, and any reasonable alternative flow regimes should also be analyzed. Furthermore, the EIR should identify the impacts and constraints to the City's water supply reliability that would occur if changes to the water rights are not approved, but the fishery flows become a requirement. The interrelationship between the development Habitat Conservation Plan and the Santa Cruz Water Rights project should also be described.

**Comment 2: Felton Diversion Fish Passage Improvements**
The "Felton Diversion Fish Passage Improvements" was identified as a "programmatic" component in the IS/NOP. However, it appears that the "Felton Diversion Fish Passage Improvements" could be an important component for the mitigation measures of the water rights project. It is not clear what level of analysis will be conducted at the programmatic level. The stream section near the Felton Diversion Facility is one of the critical habitats for adult migration and spawning of Central California Coast Coho salmon and Central California Coast steelhead. The fish passage development will directly influence the instream habitats. CDFW and NMFS have raised strong concerns regarding fish passage at the Felton Diversion Facility in the past. The EIR shall also evaluate impacts of adding the Felton Diversion Facility as a point of direct diversion.

**Comment 3: Impacts to Biological Resources**
It appears the IS/NOP only focuses on two salmonid species. Please be advised the EIR shall also evaluate impacts to any other species that identified as a candidate, sensitive or special-status species that may potentially be affected by the project.

**Comment 4: Recreation**
The IS/NOP indicates recreational impacts will not occur due to the project so that recreational issues will not be addressed in the EIR. However, the Division was unable to determine from the information provided the extent to which there may be any impacts to recreational users in Loch Lomond Reservoir as well as the San Lorenzo River itself. The EIR shall evaluate the potential for recreational impacts based on implementation of the project.

**Comment 5: General Scoping**
The EIR shall analyze any potential and foreseeable impacts that may be caused by the City's water rights project, including the time extension petitions and change petitions. This shall include an analysis of the changes to the flows and water quality within the affected streams due to the implementation of the "Agreed Flows" in addition to the operational changes that would be afforded through approval of the proposed water rights petitions. The cumulative

impacts of other foreseeable projects on the San Lorenzo River must also be evaluated. The City informed the Division in a meeting on November 6, 2018 that it proposes to withdraw all pending petitions and file new petitions to reflect its new proposal to the existing water rights. Any updates to the City's water rights project included in new change petitions filed in the future shall be discussed in the EIR.

We hope this is information is helpful in finalizing the scope of the environmental analysis required for the City's water rights project. If you require further assistance, please contact Jane Ling at (916) 341-5335 or by email at jane.ling@waterboards.ca.gov. Written correspondence should be addressed as follows: State Water Resources Control Board, Division of Water Rights, Attn: Jane Ling, P.O. Box 2000, Sacramento, CA 95814.

Sincerely,

ORIGINAL SIGNED BY:

Sean Maguire, Manager
Petition, Licensing and Registration Section
Division of Water Rights

ec: Marianna Aue, Office of Chief Counsel
Marianna.Aue@waterboards.ca.gov

Jane Ling, Division of Water Rights
Jane.ling@waterboards.ca.gov

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
**Cultural and Environmental Department**
**1550 Harbor Blvd., Suite 100**
**West Sacramento, CA 95691**
**Phone (916) 373-3710**
**Email: nahc@nahc.ca.gov**
**Website: http://www.nahc.ca.gov**
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Edmund G. Brown Jr., Governor

RECEIVED
OCT 29 2018
CITY OF SANTA CRUZ
WATER DEPT.

October 26, 2018

Sarah Easley Perez
City of Santa Cruz
212 Locust Street, Suite C
Santa Cruz, CA 95060

RE: SCH# 2018102039 Santa Cruz Water Rights Project, Santa Cruz County

Dear Ms. Easley Perez:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of <u>portions</u> of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

**Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
   a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
   b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
       i. Planning and construction to avoid the resources and protect the cultural and natural context.
       ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
       i. Protecting the cultural character and integrity of the resource.
       ii. Protecting the traditional use of the resource.
       iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

## SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

### NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Debbie.Treadway@nahc.ca.gov.

Sincerely,

for Nancy Gonzalez

Debbie Treadway
Enviromental Scientist

cc: State Clearinghouse

SOQUEL CREEK WATER DISTRICT



November 14, 2018

Sarah Easley Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
seasleyperez@cityofsantacruz.com

**Subject: Notice of Preparation of an Environmental Impact Report, Santa Cruz Water Rights Project**

The Soquel Creek Water District (District) has received and reviewed your Notice of Preparation (NOP)/Initial Study (IS) of an Environmental Impact Report (EIR) for the Santa Cruz Water Rights Project (Project) being proposed by the City of Santa Cruz Water Department (Water Department). We understand that the Project involves modification of existing City water rights to increase the flexibility of the water system within existing allocations and, once the City's water rights are modified, additional foreseeable activities may occur. As noted in the NOP, the Project includes components that will be considered in the EIR at a "project" level (per California Environmental Quality Act [CEQA] Guidelines Section 15161), as well as components that will be considered in the EIR at a "programmatic" level (per CEQA Guidelines Section 15168). The District is pleased to see the Water Department moving forward with environmental analysis of the Project; which could potentially support further development of water supply options for both the City and the District. Thus, we have taken the time to provide you the information and comments below to help you develop the best evaluation possible and that best serves our communities.

To protect endangered groundwater resources, prevent further seawater intrusion, ensure water reliability and resiliency to its customers, and prepare for climate change, the District developed the Community Water Plan (CWP) in 2015. The CWP is a data driven and community values-based plan, serving as the District's roadmap to meeting its goal of sustainability by 2040. The plan is composed of three main areas of action – promoting water conservation, managing groundwater proactively, and seeking additional water supplies. The District has been coordinating with the Water Department regarding planning and implementation of the surface water supply option of the Community Water Plan: a short-term 5-year water transfer pilot project and a potentially longer-term project that would include transferring treated river water (from Santa Cruz's North Coast Water Supplies and potentially the San Lorenzo River) to the District's system in the winter when there are excess flows. This could allow the District to reduce groundwater pumping (also known as in-lieu recharge). The City Water Department's consideration of the Water Rights Project is an important step in implementing the long-term water transfer effort included in our CWP. The District and Water Department have been working together to consider regional water supply resources, which also includes recycled water, participation in the Santa Cruz Mid-County Groundwater Agency and the evaluation of the Water Department's plan recommended by the Water Supply Advisory Committee (WSAC). Thus, the District provides the following comments on the NOP/IS for the Water Rights Project, and requests consideration of these comments in the EIR to be prepared for the Project to ensure completion of an EIR that complies with the requirements of CEQA, informs decision makers and the public about the potential environmental effects of the Project, and allows for subsequent decision-making and/or consideration by the District regarding implementation of our CWP and potential tiering of this EIR.

**Description and Analysis of <u>Project-level</u> Elements**

**Agreed Flows and Water Rights.** The NOP/IS included a brief overview of Purpose and Need, and the existing Agreed Flows commitments and Water Rights. However, the NOP/IS does not include substantial quantified information on the existing and proposed revisions to the Agreed Flows in terms of quantification and seasonality of minimum stream flow requirements, and resulting operational restrictions; quantification of proposed Pre-1914 Water Rights changes and the bypass requirements noted; or quantification of changes in water rights associated with Places of Use. The NOP/IS does not include information on the collective water supply changes that could occur with implementation of the Project. Without this additional information regarding the collective change in water supply anticipated under the Project, it is unclear whether changes in water supply could result in environmental effects that are currently identified as less than significant or no impact in the IS checklist. For instance, without understanding expected changes in water supply, it is unclear whether changes in flow could affect vegetation communities and habitat dependent on the existing flow regime, such that aesthetic resource impacts could occur; whether there are agricultural or forest lands that could be directly or indirectly affected; how expected water supply and flow changes would affect the biological resources within or dependent on the creeks/rivers included in the Project; or whether there are tribal cultural properties that relate to the affected water systems. Without understanding the expected changes in water supply, it is unclear whether there would be an increase in available water supply that could support additional growth, and its related effects on population and housing, recreation facilities, public services, and utilities.

We suggest the EIR include information regarding the collective change in water supply anticipated under the Project in the Project Description, as well as detailed impact analyses related to the collective change in water supply anticipated under the Project. The hydrology and water quality discussion indicates that conjunctive use would be analyzed as part of the Project-level analysis to consider the recharge benefits. However, conjunctive use is not described as part of the Project as defined in the NOP/IS. The EIR should either include conjunctive use as part of the Project Description, or if conjunctive use is not part of this Project, the hydrology and water quality analysis in the EIR should only consider conjunctive use as a cumulative project or as part of the Programmatic-level analysis.

**Description and Analysis of <u>Program-level</u> Elements**

**Foreseeable Actions.** The NOP/IS description of foreseeable future actions is limited to consideration of two programmatic elements: the Felton Diversion Fish Passage Improvements and Interties with adjacent water Districts. The Purpose and Need discussion related to the "Places of Use" (page 5) describes that the City needs to conform and expand the Places of Use on existing City water rights to adjacent water districts in order to "beneficially use existing water rights and to provide opportunity for potential conjunctive use of those surface water rights in combination with groundwater". The NOP/IS does not discuss the related projects that would be required to allow the adjacent districts to make use of available water supplies via the proposed water rights changes that are being considered. We suggest the EIR describe and analyze at a program level of detail the potential beneficial uses and conjunctive uses, and the associated infrastructure improvements that could occur as a result of the Project and changes to the Places of Use. Or, if those actions are not interrelated and interdependent, we suggest that the EIR explain why that is the case.

The NOP/IS Background and Project Description of programmatic components (page 8 and 9) indicates that the full physical extent and timing of these improvements is not known, thus these activities will be addressed in the EIR at a programmatic level. The IS checklist includes impact

MAIL TO: P. O. Box 1550 • Capitola, CA 95010
5180 Soquel Drive • TEL: 831-475-8500 • FAX: 831-475-4291 • WEBSITE: www.soquelcreekwater.org

analyses for program elements (such as aesthetics, air quality, ag/forest resources and mineral resources, and water quality) and concludes for many checklist questions that impacts would be less than significant or that no impact would occur. Given that no information regarding the location, construction, or operational requirements for programmatic elements is identified in the NOP/IS, the IS checklist does not include sufficient information on the environmental setting or programmatic elements to be able to adequately assess and/or analyze whether substantial environmental impacts could occur.

We suggest the EIR should include additional project description information about the type and scale of each programmatic element, to the extent that information can be defined and should include a program-level analysis of all environmental topics required under CEQA.

**Related Actions.** We suggest the EIR include an updated summary of planning efforts for all of the elements of the implementation plan recommended by the WSAC, including increased conservation, groundwater storage options through passive and/or active recharge, and advanced treated recycled water or desalination as supplemental or replacement supply in the event groundwater storage proves insufficient to meet the water security goals established by the WSAC. Also, we suggest that the EIR discuss the timing of implementation, including the expected completion of cost estimations for each supply option, as it is understood that if the cost of the overall water rights and water transfer project are estimated to be more than 130% of the cost of a recycled water or desalination option, the City would pursue purified recycled water or desalination as a primary supplemental water supply project instead of the water rights and water transfer project. It will be important for the public and local water agencies to understand the timing of the cost study, if the City will utilize the 130% cost threshold for its decision making and project approval process, and how it will inform the viability of related projects, such as the water transfer option included in our CWP.

**Cumulative Projects:** We suggest that the EIR consider other regional water supply projects and planning efforts, both in terms of direct environmental impacts from construction and operation of the anticipated regional water supply projects; as well as the long-term operational impacts of the water supply management projects anticipated. The analysis should include all anticipated water supply projects within the Santa Cruz Mid-County Groundwater Agency (MGA) planning area at a programmatic level and for future project-level EIR for the City's in-lieu and/or aquifer storage and recovery project. Currently the District is considering its Pure Water Soquel Project and other projects within the Mid-County region could be developed by other municipal agencies or perhaps through the MGA.

**CEQA Alternatives:** While acknowledging that CEQA alternatives must meet most of the Project objectives, while reducing one or more significant impacts of the Project, which are not yet known – the District is interested in understanding whether the Water Department has evaluated the other WSAC recommendations (such as recycled water) for their ability to provide for the required fish enhancements. This could include, but not be limited to, the use of recycled water for irrigation (to offset potable water demands of your surface water sources, purified recycled water for groundwater recharge or reservoir augmentation (to supplement potable water demands), and river/creek augmentation (whereby treating recycled water to directly into a flowing source to increase fish flows). We suggest the EIR should consider alternative means for meeting the Agreed Flows and fish enhancements proposed as part of the Project.

We appreciate the ongoing collaboration with the Water Department and looks forward to reviewing the project-level and programmatic-level EIR on your Water Rights Project when it is available. If you have any follow-up requests related to this letter, please don't hesitate to contact me.

Sincerely,

Ron Duncan, General Manager
Soquel Creek Water District

**Environmental Committee for the SLV**
**VALLEY WOMEN'S CLUB of San Lorenzo Valley**
**PO Box 574, Ben Lomond, CA 95005**
**831/338-6578**
**www.valleywomensclub.org**

**November 14, 2018**

**RE: NOP City of Santa Cruz Water District Water Rights**

**To Whom It May Concern:**

**First may I say that we are pleased to see that the well-being of the endangered Coho and Steelhead are a crucial part of your planning. We are hopeful that this will begin to provide improved viability for these vital fish species.**

**We have several concerns that we wish addressed before or during the NOP.**

**First and foremost, there are too many references to the Habitat Conservation Plan which has not been completed, so we cannot tell whether we agree with them or not, particularly in relation to stream flow. Will the Agreed Flows be sufficient during drought year? How can we evaluate whether they are sufficient to mitigate the amount of water being removed from the River at various locations. Hence the HCP should have been and should be completed before continuing the EIR process.**

**When were the Agreed Flows negotiated? Do they take into account the significant streambed changes in the River during large storms? An example of this is evident in the Rincon area of the San Lorenzo River – the new multiple channels reduce the depth of the water as it is spread over a far wider area – can we be assured that the**

**amount of flow will insure adequate depth during drought and low rain years. This is a significant danger to the fish migration.**

**We are concerned that allowing year-round diversion, increasing diversion at Felton during the summer would potentially reduce the crucial habitat between Felton and Santa Cruz.**

**We find the reasoning assessing the level of impact regarding population and housing growth on page 32 of concern. Even if annual water extraction is not increased, the city will be able to extract more during dry and drought years. This will thus increase the available water during those years, with the potential to allowing greater population growth. This brings into question the assertion that, "**The Proposed Project would not increase the City's overall water supply to accommodate growth."

**One more thing is the Mandatory Findings checklist on page 38 should have both 18a and b checked as potentially significant issues despite mitigation, because there is no way to evaluate that mitigation, and previously stated.**

**Respectfully submitted**

**Nancy B. Macy, Chair**
**Environmental Committee for the SLV**

Ms. Sarah Easley Perez
Via email

November 14, 2018

Re: Comments on scope of the EIR for the "Santa Cruz Water Rights Project".

Dear Ms. Easley Perez,

This letter is being submitted to comment on the EIR proposed to be undertaken in support of the City's plan to modify existing City Water rights.

First and foremost, Water For Santa Cruz County (WFSCC) recognizes the critical importance of the city's application for an expansion in place of use of the San Lorenzo River water to include all the water districts in the North County. Accordingly, we applaud the district's leadership in taking this step as it opens up the real potential to develop a regional water solution that will use and take advantage of the water sources in one area and the storage in another in a combined manner that can provide increased water supply security for all the water districts in the North County region.

Second, here are six comments and related recommendations to the changes proposed in the Santa Cruz Water Rights Project document dated October 15, 2018 ( 48 pages).

1. **Regarding the pre-1914 water rights to be amended by the City Council Resolution: Pages 7 and 8 of the Santa Cruz Water Rights document mention that the city wishes to modify its pre-1914 water rights to apply Agreed Flows as minimum bypass to North Coast diversions.**

   **<u>Comment</u>:**
   The EIR should include a calculation of the amount of available water that will be reduced by implementing the proposed Fish release bypass flows on the North Coast streams Majors, Laguna and Liddell. This should be done for each year for the 10 year 2009 – 2018 period and include the calculations by month for each of those years.

2. **Regarding the post – 1914 water rights to be amended through change petitions filed with State Water Resources Control Board (SWRDC) Page 7:**

   **<u>Comment</u>:**
   a. The EIR should include a calculation of the amount of available water that will be reduced by implementing the proposed Fish release bypass flows below Tait St. Again, this calculation should be done for each year for the 10 year 2009 – 2018 period, including the calculated amounts by month as well.

b. The EIR should also include a calculation of the amount of available water that will reduced by implementing the change of the cfs requirement for minimum bypass flows on the San Lorenzo at Felton Diversion for adult and spawning fish flows from 20 to 40 cfs in the months of December through May. Once again, this calculation should be done for each year for the 10 year 2009 – 2018 period, including the calculated amounts by month for each year as well.

### 3. Regarding the methodology of the study:

**Comment:** For all water flow changes, the EIR should present the results in a form <u>at least as detailed</u> as the following, which is taken from the Annual Report of the Santa Cruz Water Department (2010) page 37.

MONTHLY WATER PRODUCTION BY SOURCE OF SUPPLY
2010
MILLION GALLONS

| Source | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coastal Sources | 69.24 | 102.93 | 146.51 | 145.81 | 137.58 | 113.90 | 96.22 | 78.45 | 64.72 | 57.97 | 72.00 | 82. |
| San Lorenzo River * | 101.65 | 40.46 | 58.90 | 47.72 | 108.06 | 199.01 | 220.28 | 219.13 | 188.10 | 152.69 | 79.20 | 53. |
| Newell Creek | 40.30 | 47.32 | 32.43 | 26.29 | 31.05 | 11.43 | 8.34 | 9.20 | 44.04 | 46.80 | 52.18 | 61. |
| Beltz Wells | 0.76 | 4.75 | 0.11 | 0.00 | 0.43 | 21.08 | 27.48 | 27.11 | 25.76 | 28.64 | 14.17 | 1. |
| TOTALS | 211.95 | 195.46 | 237.95 | 219.82 | 277.12 | 345.42 | 352.32 | 333.89 | 322.62 | 286.10 | 217.55 | 198. |

* Monthly totals for San Lorenzo River include water produced from Tait wells No. 1 and 4; see below for breakdown of Tait Well productio
Note: San Lorenzo River here in Source of Supply is water pumped from the San Lorenzo River and Tait wells when run.
It does not included any other source. The figure is from the Monthly Production report.

ANNUAL WATER PRODUCTION BY SOURCE OF SUPPLY
2001 - 2010
MILLION GALLONS

| Source | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | TEN YEA AVERAG |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Coastal Sources | 1,326.52 | 1,386.21 | 1,296.96 | 1,315.44 | 1,487.18 | 1,603.83 | 848.65 | 843.54 | 814.50 | 1,168.06 | 1,209. |
| San Lorenzo River * | 1,908.98 | 1,882.47 | 1,917.89 | 1,984.36 | 1,573.34 | 1,610.20 | 2,261.56 | 2,064.85 | 2,037.81 | 1,468.54 | 1,871. |
| Tait Wells | 93.98 | 93.74 | -- | -- | -- | -- | -- | -- | -- | -- | |
| Newell Creek | 842.37 | 537.95 | 748.46 | 652.63 | 583.80 | 467.31 | 487.82 | 530.39 | 197.16 | 410.95 | 545. |
| Beltz Wells | 171.35 | 143.10 | 129.66 | 123.62 | 84.62 | 118.48 | 178.94 | 165.11 | 172.44 | 151.40 | 143. |
| TOTALS | 4,343.20 | 4,043.46 | 4,092.97 | 4,076.05 | 3,728.94 | 3,799.82 | 3,776.97 | 3,603.89 | 3,221.90 | 3,198.95 | 3,769. |

* Beginning 2000, San Lorenzo River totals include water produced from Tait wells.
Note: There is unaccounted for coast blow off at Tait Wells.
Source: Monthly Production/ SCADA Monthly System Reports

Contact: Terry McKinney, Production Superintendent

### 4. Regarding the effect of the revised minimum bypass flows:

**Comment:**
Regarding the San Lorenzo River calculations, once we know the amount of the proposed reduction, the EIR needs to evaluate the effect on the river's system of increasing the daily cfs permitted to be taken to Loch Lomond from the Felton Diversion to 40 cfs when conditions for fish flows downstream are being met. For example, increase the city's daily permissible take from 20 cfs to 40 cfs when the San Lorenzo river flows exceed 65 cfs and are below 400 cfs.

**Comment:**
The EIR should also include an evaluation of the benefit of increasing the maximum annual take

5. **Regarding the proposed action by the City Council to "modify City water rights to incorporate the Agreed Flows",** *and* **' commit the City to these flows regardless of the outcomes of these processes. Page 8.**

   **Comment:** Please evaluate the risks to the City of committing to reduced flows in advance of having negotiated a long sought HCP.

6. **Regarding public access to the process:**
   **Comments:**
   All scoping questions should be public information and available verbatim on demand by December 1, 2018.

   All public comment on the Draft EIR should be public information and available verbatim on demand within 15 days of the close of the comment period.

We look forward to your responses to these points and believe their inclusion will not only make the document more complete but also more usable going forward.

Again, we wholeheartedly support the Department's work in proceeding for modification of the City's water rights to allow wider used of our water resources and believe these additions would be assistive to that end.

Water for Santa Cruz County
By:
Scott McGilvray
Randa Solick
John Aird
Becky Steinbrunner
Monica McGuire

Cc: Rosemary Menard

**From:** Ken Macy <kmacy@earthlink.net>
**Sent:** Wednesday, October 31, 2018 12:46 PM
**To:** Sarah Easley Perez <seasleyperez@cityofsantacruz.com>
**Cc:** Linda Fawcett <lindafawcett45@att.net>; Julie Haff <Haff.julie@gmail.com>; 'Joe Griffin' <griffinjoe9451@gmail.com>; Karen McNamara <karen.mcnamara@sbcglobal.net>
**Subject:** NOP EIR

Hello Sarah,

The Rotary Club of San Lorenzo Valley has received your document *Notice of Preparation of an Environmental Impact Report*. I think a few of our members will attend your informational meeting at Highlands Park in Ben Lomond.

Also, at some point, we invite you or some other representative from your department to come to one of our meetings and make a short presentation on the projects that you and planning. I can put you in touch with our speaker coordinators.

Here is the club website: https://portal.clubrunner.ca/6779

Regards,
Ken Macy, Treasurer
SLV Rotary Club.

Bruce Ashley
PO Box 2955
Santa Cruz, CA 95063
831 429 8300
ba@phot.com

November 14, 2018

Sarah Easley Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060

**Comments on scope and content of Environmental Impact Report for the Santa Cruz Water Rights Project**

I'd like to commend the City Water Department on its consideration and concern for the threatened and endangered fish species in the streams and river that make up Santa Cruz's water supply. And particularly the HCP planning, proposed fish ladder improvements at the Felton Diversion, and habitat improvements mentioned at the scoping meeting. However, I believe that the EIR as proposed cannot be undertaken until the HCP process is completed with citizen participation and environmental review. The HCP process is intended to include citizen participation. Thus far, the HCP process has been carried out behind closed doors with negotiations absent public input. When will citizens be given the opportunity to provide input to the HCP process? Input from the public should have been requested by the city before Agreed bypass Flows were established. This NOP assumes that Agreed Flows are acceptable mitigation and pose no impact to fisheries. I believe this may be a false assumption.

I am concerned about when the Agreed Flows were negotiated? The stream structure is dynamic and may change greatly after large stormflow events. Given the long history of these negations, have the Agreed Flows taken into account the recent streambed changes in the Rincon area of the San Lorenzo River Gorge? The wetted channel has split, dividing winter flows into multiple channels with shallower conditions than previously. Do the bypass flows now need to be greater now to insure adequate adult steelhead and coho migration?

I think it is important to consider not just minimum bypass flows for the Salmon and Steelhead in the San Lorenzo affected by this project, but also the quantity of flows overall. The success of the fish migration and rearing are increased by "ideal" flow rates compared to just "minimal" survival volumes that are in the Agreed Flows. Wouldn't it be important to consider how flows might be decreased, especially in normal and dry water years at specific times and places by the modified diversions rates under this plan? A normal year March flow at the Big Trees gauge on the San Lorenzo might be 200cfs, but with the proposed change in Rights and increased maximum diversion rate, the Felton diversion infrastructure may be capable of reducing the bypass well below 100 cfs; maybe even lower, to the minimum amount, say 25cfs, to provide water for Conjunctive use. How would this affect impact late season fish migration through the Rincon Gorge area below?

The fish need protected instream flows especially during dry and drought years. Yet this is when the city water supply is most tested. Any project that will allow modified water diversion rate and greater total volume than is possible under the existing water rights and infrastructure will significantly increase the negative impact to steelhead and coho salmon.

If you add the Tait Street diversion point of diversion to the Felton diversion permit, then up to the Agreed Flow bypass at Felton may be diverted at Tait Street instead of the 6 cfs limit that presently is permitted at Tait Street. Increasing the number of diversion points will facilitate the city's ability to increase diversion rate compared to existing conditions. This may greatly impact adult salmonid passage to Tait Street during dry and drought years, as well as quicken sandbar closure during spring and early summer to curtail smolt outmigration.

If the proposed project adds the Felton diversion as a point of diversion for the Tait Street diversion permit, you expand the season of diversion at Felton by including it as a year round point of diversion under the Tait Street diversion permit. Then 6 cfs (or a different Agreed Flow bypass) intended for the reach downstream of Tait Street may be diverted at Felton in the summer, greatly reducing steelhead rearing habitat between Felton and Santa Cruz. The fish need all of the available streamflow during the dry season, downstream of Felton to maintain good habitat and growing conditions. I think, items 4a and 4d on page 18 in the environmental checklist should be checked as potentially significant issues, despite mitigation.

The proposed project will allow an increase in diversion rate above the current 20 cfs limit at Felton. Because the project proposes to increase the maximum diversion rate at Felton, it will allow diversion of a larger proportion of stormflows than under existing conditions during dry and drought years when adult salmonid passage conditions are already limited. This may have significant impact to adult salmonid fish passage during dry/drought years if the Agreed Flows are inadequate. On page 18, the NOP asserts that "changes in stream flows would result in impacts (likely beneficial) on aquatic special-status species." I believe that changes in streamflow, such as increasing the diversion rate at Felton during the winter and spring of a dry or drought year may impede adult salmonid passage. Without seeing the Agreed Flow bypasses that were negotiated and some modeling of how the system would function, it's hard for me to know how effective they would be.

Would it be possible to include in the EIR some graphic depictions of various scenarios that portrayed the comprehensive picture of the water flow rates that will be diverted from the San Lorenzo by location at different times of the year in different water years under the proposed project compared to existing conditions? There are many possible variations in water use and weather and I believe this type of modeling has already been undertaken. The problem is making some significant scenarios comprehensible. A visual, graphic depiction of the river with the various diversions and bypass flows quantified could help us to understand the dynamics better. Perhaps a dozen of these graphics could let us see more exactly the how the proposed Project will operate?

In addition, I would like to suggest that as part of the Mitigations for Environmental Impacts, section 4d in the checklist regarding, movement of migratory fish, you include fiscal support for the Culvert (Level Control Device) at the San Lorenzo River Lagoon exit. And as the number of Adults adult salmonids in the San Lorenzo watershed is at a critically low point, as a mitigation measure, I strongly recommend that you consider providing financial support for our local fish hatchery, the Monterey Bay Salmon and Trout Project, to recover and restore our steelhead and salmon populations.

Best Wishes,

Brian Ashley

CITY OF SANTA CRUZ

WATER DEPARTMENT
212 Locust Street, Suite C, Santa Cruz, CA 95060 • 831-420-5200

(please print)

Name: Catherine Borrowman

Organization (if any): Natural Resources Communications

Do you represent this Organization? Yes: ☒ No: ☐

Address: 1315 Laurel St.

City, State, ZIP: Santa Cruz CA 95060

E-mail: cborrowman@baymoon.com Telephone: 831-227-6412

## Santa Cruz Water Rights Project
## Written Comments on the Scope of the Environmental Impact Report (EIR)

(please print)

Is the County of Santa Cruz required to approve or review the Santa Cruz Water Rights Project EIR? It was not listed in the NOP.

Please clarify in the EIR if the City of Santa Cruz will have the right to use water from the Felton and/or the Tait Diversion above the Agreed Flows when the base flows from the Santa Margarita Groundwater Basin into Bean Creek are higher after a conjunctive use project fills up the Basin.

Why is the City not requesting to increase the amount of water diverted in the wetter months when there will be more flow after storm events? I thought the In Lieu/ASR strategy relies on the practice of diverting more during and after storm events, treating it, and delivering it to areas relying on groundwater. If the City will not be allowed to divert more winter flow water, but instead would be diverting every day that there is more water than the Agreed Flows up to the monthly limit, please clarify if this is expected to meet the City's needs as a drought supply solution if climate change occurs. If storms are more intense and less frequent, there will be less runoff to divert ~~and more~~ because the watershed will not absorb the quantity of water in hard rains. There is also greater potential that the diversion structures may get damaged by rocks and logs moving downstream in high flows. If we need to rely on water from Loch Lomond and groundwater when we can't operate the surface water system, we would need to be able to recover banked water. Please discuss how climate change hydrological

*Please note: Comments, including personal information, become public information and may be released to interested parties if requested.*



models provide data that supports the reasonable & beneficial uses of water →

## Written Comment Form

### Public Scoping Ends: November 14, 2018

To ensure that comments will be considered during the scoping period, the City of Santa Cruz Water Department must receive written comments by the close of the public scoping period (**5:00 PM, Wednesday, November 14, 2018**). There will be additional opportunities to comment on the Draft EIR for the project during the Draft EIR public review period anticipated for the summer of 2019.

### Please either leave this sheet at the "comment table" before you leave today or send by mail or email to the address below.

### Send comments to:

Sarah Easley Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
831-420-5327
seasleyperez@cityofsantacruz.com

*Please note that your address, phone number, e-mail address, or other personal identifying information in your comment, is part of your entire comment. Comments—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.*

from surface water sources, Will these change petitions cause the City to lose seniority with its water rights?
Will increased flexibility with water rights enable the City to make cold water releases from Loch Lomond to improve the temperature in stream for anadromous fish one day when the water supply project(s) provide the needed reliability and Loch Lomond is no longer our only insurance in drought conditions?
If Agreed Flows are included in water rights, will this limit the City's flexibility in managing the water system before the InLieu/ASR project components (interties and new wells) are operational? In 2014, the City had to request a temporary reduction in flow releases for health and safety purposes during rationing. Please address in the EIR the short term environmental impacts of an extended drought from 2020 to 2025 if the Project may affect them.

Kevin Collins
P.O. Box 722 Felton, CA 95018
europa@cruzio.com 831-335-4196

Sarah Easley Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060

November 14, 2018

Subject: Notice of Preparation of an EIR addressing the Santa Cruz Water Rights Project.

To proceed with this water rights modification before the 17 years of delay in completing a City Habitat Conservation Plan is backwards public policy.

Any EiR prepared in this reverse of priorities will be invalid. The establishment of base flows after diversions at Felton and Tate St. cannot avoid the impact on salmonids attempting to pass through the lower San Lorenzo Gorge and its rock cascades that are major impediments to fisheries migration during drought years. The same is true of critical riffles that change every year in response to sediment and cobble movement in the riverbed. The depth of these riffles is understood to be a point of contention between the City Water Dept. and NOAA / NMFS and the CA Department of Fish and Wildlife. This is despite any recent attempt to avoid this long standing dispute.

Sediment and other pollution loads in the San Lorenzo are not declining. I have seen no evidence that any improvement in water quality has occurred.

I find this proposed sequence of events to be bizarre and legally invalid.

A Water Rights Modification EiR must follow after final agreement on the astonishingly long delayed endangered species HCP that the City undertook on its own accord.

Soliciting public comment on a plan that has remained secret is inviting legal challenges to any secondary EIR.

Regards,

Kevin Collins

CITY OF
SANTA CRUZ

WATER DEPARTMENT
212 Locust Street, Suite C, Santa Cruz, CA 95060 ◆ 831-420-5200

*(please print)*

**Name:** LYDIA HAMMACK

**Organization (if any):** VALLEY WOMEN'S CLUB - ENVIRONMENTAL COMMITTEE + PRIVATE CONCERNED CITIZEN

**Do you represent this Organization?** Yes: ☐ No: ☒

**Address:** 12561 COLEMAN AVE

**City, State, ZIP:** FELTON, CA

**E-mail:** L.HAMMACK @ ATT.NET **Telephone:** 831-335-5489

## Santa Cruz Water Rights Project
## Written Comments on the Scope of the Environmental Impact Report (EIR)

*(please print)*

PLEASE STUDY THE METHODS OF INJECTION OF WATER BACK ~~AD~~ INTO WELLS.

WHAT KIND OF PRESSURE IS PLANNED?

SOUNDS TOO MUCH LIKE FRACKING WHICH CAN CAUSE EARTHQUAKES

THANK YOU

Lydia Hammack

*Please note: Comments, including personal information, become public information and may be released to interested parties if requested.*

(See Reverse for Additional Information)

November 14th 2018
Mark D. Lee, MURP-CEM, MBA, BA, AA
Environmental Project Manager
220 East Terrace Drive
Ben Lomond, CA 95005-9667
(831) 335-4997
Email: MDLee4125@gmail.com

Sarah Easily Perez, Associate Planner
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
(831)-420-5327

Subject: Critique of proposed Water Rights Project Notice of Preparation Scope of Work -Amended

Dear Ms. Perez;

I have reviewed the City of Santa Cruz proposed Notice of Preparation Scope of Work (per CEQA 15802) for the Santa Cruz Water Rights Project amending and I find it woefully inadequate and not reflective of the true short and long term environmental impacts on of the City's proposed water consumption and water usage and how it will affect 20,000 water consumers within the San Lorenzo Valley Water District. The City's assumption that this proposal (CEQA Section 15168). The proposed Program EIR to increase water importation and diversion by the City of Santa Cruz from the San Lorenzo Valley does not have adverse long term impacts on water consumption; including potential subsequent 'enabling' policies for reselling our SLVWD derived water for the Soquel Creek Water District and other POUs. The City's proposed amendment to its water right permits cumulatively will long term dramatically affect our own Coho salmon, steelhead trout, other fish and reptiles living within the riparian eco-systems of the San Lorenzo River and eastern and northern tributary system above the Felton diversion dam and Newell Creek junction within the San Lorenzo Water District and Santa Margarita Ground Water Basin.

SLVWD is already experiencing its own 7 years of drought; 25% mandatory water conservation measures and 65% water rate increases and is struggling to meet its commitment to supplying surface water to ground water dependent City of Scotts Valley. Due to limited water supply and storage, both the San Lorenzo Valley Water District and City of Scotts Valley face potentially inadequate water supplies and its critical shortages during these drought years is of real concern. We are very concerned that the City of Santa Cruz will overdraft the Santa Margarita Ground Water Basin, with the increased diversion allowed by your 1941 water permits.

The City's proposed scope of work lacks full and thorough understanding our how your proposed Program and Project EIR program "enabling" policies and project construction impacts will affect the physical environment; seismic risks; ground water hydrological risks, and long term growth inducing population impacts requiring potentially further water permit amendments. There is absolutely no analysis of economic-financial impacts regionally from diverting surface water to the City without evaluating the long term impacts against a backdrop of erratic and inconsistent supply of surface and ground water resources originating in the San Lorenzo Valley Water District and City of Scotts Valley Water District as alluded to in "draft" Scope of Work findings and checklist selection of levels of impact (per CEQA 15082) concerns this reviewer.

Lets start! In Page 5 and 6 your Scope of work proposal refers to expanded POUs, yet Soquel Creek Water District is not part of the Santa Margarita Ground Water provisional volunteer organization and therefore there is not requirement by the San Lorenzo Valley Water District to provide water through 'conjunctive use'. In fact the City of Santa Cruz itself is a 2nd tier member of the Santa Margarita Ground Water Agency. The Scope of Work needs to explain the long term mechanisms, short term and long term environmental impacts on water and pricing of water importation away from San Lorenzo Valley Water District and its impacts on this proposed water allocation scenario a great possibility of causing water scarcity risks that may occur within the San Lorenzo Valley Water District. The Scope of Work for a future does not address this at all. We are requesting a detailed analysis of the Felton Diversion project; its costs; and environmental costs and long term adverse impacts of amending Felton Permits 16123, Felton Permits 16601, Newell Creek L.9847 and Tait L 7200, 1553 to be used for Municipal, domestic, industrial, recreational and fire protection, including the long term adverse impacts on Newell Creek and Loch Lomond.

CEQA sections 15126 and 15126.2 Consideration and Discussion of Significant Environmental Impacts is not being address as Potentially Significant Issues instead of Potentially Significant Unless Mitigation Incorporated on Page 27 for Environmental Impacts under Section 9 Hydrology and Water Quality and should be. I disagree with the City's initial analysis found on page 28

(b.) …"Project Components of the Proposed Project consists of changes to the City's water rights which may make water available through conjunctive use to recharge, both to allow recovery of these basins and enable potential of recharged water. This issue (appears to be conveniently side stepped and not realistically evaluated because ground water recharge has never been done successfully nor proven to actually work, especially along the compressed sandstone structure along the coast) will be further addressed in the EIR" is a sadly disappointing statement and is not adequate, may cause potentially significant water quality and may result in a loss and waste of valuable water.

The City's proposed Scope of Work does not provide sufficient technical and financial impacts from the information provided and alluded to in Table 3 on page for the San Lorenzo Water District to make any meaningful critiques and amendments. If the EIR enabling policy for future water exchanges to Soquel Creel Water District is to be included in this analysis in the Program DEIR, you must include analysis on how water redistribution to the City of Santa Cruz and Soquel Creek Water District affects San Lorenzo Valley and Scotts Valley Water District (as part of the whole Santa Margarita Water Ground Water Agency Soquel Creek Water District is part of their own GWA. San Lorenzo Valley Water District would will need further detailed analysis of the long term impacts of increasing flows, increasing volume and diverting or exporting water to the City of Santa Cruz (and Soquel Creek Water District)

This reviewer does not see any analysis nor rationale for extending the Felton Permit for 25 years without adequate economic and environmental impacts that may affect the long term water usage of both surface and well water of the full membership of the Santa Margarita Ground Water Agency. The request for adding 25 year without any knowledge of how this extension will affect the sustainability of the San Lorenzo Water District with the region's current history and propensity for wild swings in rainfall and draught cycles; is very troublesome and recommend shortening this extension time to 5 years. (found in on Page 8)

The reviewer takes exception with the City's findings on page 32, Section 13 Population and Housing Impacts (a.) Induce substantial population growth in an area, either directly for proposing new homes and businesses or indirectly the extension of infrastructure is Less than Significant is direct conflict with the findings on page 35 the proposed Scope of Work anticipates Potentially Significant Impacts unless Mitigation is incorporated in Section 16 Transportation and Traffic (a.) Impacts on performance of circulations systems, intersections, streets, highways, freeways, pedestrian, bicycle paths or mass transit (b.) congestion management and (c.) emergency access. Yet on page 35 …" this will not be analyzed in the EIR. This needs further elaboration in the Scope of Work and DEIR and completely ignores the sub regional growth inducement impacts from potentially sending water onto Soquel Creek Water District under "Growth-Inducing Impacts of the Proposed Project" as required per CEQA 15126.2 (d.)

We are also concerned that the City of Santa Cruz Water Advisory Committee has advised the City and made water usage policy recommendations to amend City's water right permits dating back to 1941; was completed in a vacuum without including detailed analysis of permit amendment proposals without any participation by local ratepayers groups and the SLVWD Board of Directors that may have impacts on the District's own capital facilities projects and environmental impacts of the San Lorenzo Valley Water District.

This concludes my comments and recommendation to the City of Santa Cruz regarding the proposed Notice of Preparation Scope of Work for the Water Rights Project.

Thank you
Mark D. Lee

CITY OF SANTA CRUZ

WATER DEPARTMENT
212 Locust Street, Suite C, Santa Cruz, CA 95060 • 831-420-5200

Name: Monica McGuire (please print)

Organization (if any):

Do you represent this Organization? Yes: ☐ No: ☐

Address: 20 Mahalo Meadow Rd. + Bus. Addr. 9099 Soquel Dr. Bldg. 2

City, State, ZIP: Corralitos CA 95076 Aptos CA 95003

E-mail: monica.healingcoach@gmail.com Telephone: 831 465-1851 land line

## Santa Cruz Water Rights Project
## Written Comments on the Scope of the Environmental Impact Report (EIR)

(please print)

Re: Water Dedicated to maintain a certain flow ~~effect~~ level for fish:

- Will you please include all calculations for the next 10 years (2009-2018) based on HISTORICAL data, especially for dry years?

and • Compare how you would calculate water available for Santa Cruz City?

and • " " " " " " " for conjunctive Use?

and • Explain your rationale for ~~the~~ your choices?

Will you also please evaluate the risks of not having a habitat conservation plan in place before the SC City Council takes over to dedicate minimum fish flows?

Will you please explain all rationale and possibilities of consolidating all of our Region's Water Districts?

and - Especially describe all rationale and possibilities of overcoming issues between the SCMU and the SqCWD (Santa Cruz Muni Water & Soquel Creek Water District) BY AT LEAST consolidating THESE TWO districts? ((which have such complementary assets and needs)) (Great Excess Water flow into the MonT. Bay and Great Water Aquifer Storage Space.)

Monica McGuire
11-14-18

*Please note: Comments, including personal information, become public information and may be released to interested parties if requested.*

**From:** Jerry Paul <jpaul@ix.netcom.com>
**Sent:** Wednesday, November 14, 2018 4:59 PM
**To:** Sarah Easley Perez <seasleyperez@cityofsantacruz.com>
**Subject:** EIR

Sarah Easley Perez, Associate Planner

City of Santa Cruz Water Department

212 Locust Street, Suite C

Santa Cruz, CA 95060

seasleyperez@cityofsantacruz.com

Re: Santa Cruz Water Rights Project dEIR

Dear Ms. Easley-Perez,

I would like to thank you for the two well-run public meetings last week to explain the Initial Study results and CEQA process. I found them very welcoming and transparent, and really appreciated the public question and answer sessions.

I also applaud the proposal to expand POUs.

I am submitting the following comments for the public record regarding the draft Environmental Impact Report for the Santa Cruz Water Rights Project ("Proposed Project").

Please click "Reply" to verify receipt of this document.

Thank you very much.

Sincerely,

Jerome Paul

120 South Morrissey Ave.

Santa Cruz, CA 95062

831-457-0910

jpaul@ix.netcom.com

================================

1. Please include in all future reports related to the Proposed Project all public comments and questions verbatim.
2. Please insure that all public comment and questions related to the Proposed Project be made conveniently available verbatim on demand within 15 days of receipt.
3. Time-shift (storage) from wet times to times of relative scarcity — Since it is entirely possible that, presently and in the coming decades, the Proposed Project's measures listed on page 7, Table 3 (modification of City water rights, Places of Use ("POUs"), diversion methods & points, etc.) may be insufficient to provide 100% of the water needed by endangered and threatened species habitat in every month, worst case. Please estimate the shortfall in each respective month.
4. Regional inclusivity middle half of the County (a.k.a. North County) Seeing as how expansion of the list of Places of Use ("POU List") is key to providing the operational flexibility to substantially enhance a great many desirable environmental outcomes, please optimize the POU list with foresight, to include additional parties.
5. Please thoroughly evaluate the environmental merits of a regional "Universal POU" to include: aquifers, groundwater agencies, the County, public but independent pumpers (e.g., Cabrillo College, UCSC…), future entities as appropriate, private pumpers, and last but not least, environmentally threatened and/or endangered species habitat. An explicit and direct environmental POU would tend to radically reduce the decades of conflicts and delays between water agencies and environmental regulators, and make for fast solutions on the spot. A Universal POU would henceforth improve flexibility of operation, responsiveness to crises, a larger base to support threatened and endangered species, reduced consumption of energy, economic benefits, and a lot more.

6. Please thoroughly analyze the “energy chain” all of the way back to its sources, which are largely7 terrible environmentally. MontereyBay utility gets sustainable energy, but takes it from a pool, which leaves the rest of the world using more coal, nuclear, hydroelectric, etc.
7. Once aquifers are filled using the new operational and POU conveniences contemplated by this dEIR, storage can be used much more aggressively for habitat and for boosting endangered and threatened species populations. Please estimate how many extra GPY would become available once the two main aquifers of the region are recharged to optimal levels
8. Higher bypass threshholds result in fewer diversion days, so condier raising limits per day.
9. Consider fire protection over wider region EIR forest saved, assets saved, money saved,…
10. shortening of days of diversion at Felton should be compensated by more CFS per day when available
11. Diversions: Trading tens, or taking 80% of what remains until City reaches physical diversion capacity limit of some 70 CFS total in a flow which might be thousands of CFS.
12. Both ongoing and temporary to fill a …………………….
13. Consider sea level rise
14. Deliver timed patterns of flow: e.g., Day 1, 2, 3, 4 may have CFS flow of 1, 0, 7, 3,.

15. SCWD now has a record of the level of the water in Loch Lomond over the past 50 years; please use it to develop a statistical model for predicting on each day of each rainy season the optimal amount of river water to harvest during that day to add to storage for habitat releases in later days of higher environmental need (be they stream augmentations, or

CITY OF SANTA CRUZ

WATER DEPARTMENT

212 Locust Street, Suite C, Santa Cruz, CA 95060 • 831-420-5200

11/14/18


Name: Becky Steinbruner (please print)

Organization (if any):

Do you represent this Organization? Yes: ☐ No: ☐

Address: 3441 Redwood Drive

City, State, ZIP: Aptos, CA 95003

E-mail: KI6TKB@yahoo.com (six) Telephone: 831-685-2915


## Santa Cruz Water Rights Project

## Written Comments on the Scope of the Environmental Impact Report (EIR)

*(please print)*

Dear Ms. Easley-Perez,

I submitted comment recently but did not receive an acknowledgement of your receipt. Because my computer system is problematic, I am submitting here a hard copy of my comments, with minor grammatic edits.

I would also like to submit the following additional comment:

1) Please evaluate and describe the Habitat Restoration Plan agreements in terms of process, content and risks associated with City Council Action to Codify Pre-1914 stream flows.

Thank you

*Please note: Comments, including personal information, become public information and may be released to interested parties if requested.*

(See Reverse for Additional Information)

11/14/18

Dear Ms. Easley-Perez,
I would like to thank you for the two well-run public meetings last week to explain the Initial Study results and CEQA process. I found them very welcoming and transparent, and really appreciated the public question and answer sessions.

I am submitting the following comments for the public record regarding the draft Environmental Impact Report for the Santa Cruz Water Rights Project. Thank you very much.
Sincerely,

Becky Steinbruner
3441 Redwood Drive
Aptos, CA 95003
831-685-2915
ki6tkb@yahoo.com

1) Please include in verbatim all NOP public comments submitted in the Draft EIR.

2) Please define "limited water service area along the coast north of the City..." in terms of residential, commercial and agricultural uses and address possible Project impacts to these customers.

3) Please include quantifiable amounts of water available from North Coast streams sources and the San Lorenzo River source for transfer and in lieu storage with neighboring water municipalities in dry years and very dry years, based on historic data.

4) Please define and explain the differences between post-1914 licensed (Newell Creek) versus permitted (San Lorenzo River) sources (page 4) and describe any environmental impacts.

5) Please clearly identify required volumes in all surface water sources for fish populations and show historic data of these flow maintenance levels in very dry and dry years.

6) Include consideration of a possible Santa Cruz City and Soquel Creek Water District consolidation as an alternative and describe impacts on Place of Use if the two agencies were consolidated.

7) Please include an evaluation of using neighboring inactive quarries for additional water storage and groundwater recharge.

8) Please evaluate necessary pipeline and increased intertie connection sizes to accommodate maximum conjunctive use needs and environmental benefits for Santa Cruz City and neighboring water agencies.

9) Please describe the proposed "travelling brush system" mentioned in the Initial Study related to the Felton Diversion Fish Passage Improvements.

10) Please include and evaluate Ranney Collectors to augment surface water collection from the San Lorenzo River during large storm events or post-wildland fire events when streamflow turbidity levels are high as a method of increased security of quality water supply.

11) Please include discussion of San Lorenzo River fully-dedicated rights vs. Soquel Creek adjudicated rights and the associated environmental implications.

12) Please evaluate project design alternatives with a goal of minimal energy use to supply treatment plant and intertie connections with water for Santa Cruz City and regional conjunctive use security during emergencies with long-term power outages (page 24)and relate them to the Santa Cruz City and County Emergency Response Plans and Disaster Preparedness Plans.

13) Please do evaluate the environmental benefit of enhanced water supply availability for Santa Cruz and neighboring agencies with conjunctive use to provide increased fire protection supplies in Santa Cruz

City and neighboring agencies wildland/urban interface and watershed protection areas (page 24-26, Item 8h).

14) Please do evaluate the potential impact on groundwater levels and stream flows in Soquel Creek and Aptos Creek with indirect effects of in lieu passive recharge (page 28, 9b and page 33 item 14a) and conjunctive use.

20) Please incorporate recent known stream flow increases noted in Soquel Creek when Soquel Creek Water District ceased pumping at Main Street Well in environmental assessments of conjunctive water use impacts.

21) Please evaluate possible increase in development of housing/urban growth in MidCounty areas due to Project and Programmatic impacts (page 32).

22) Please evaluate possible impacts of adding Mount Hermon, Trout Gulch Water Mutual and PureSource Water to Programmatic intertie connections for enhanced conjunctive use and consider groundwater recharge collection projects in those areas where soils have been identified by Dr. Andy Fisher and the Recharge Initiative to be favorable for passive recharge projects.

23) Please describe preliminary design concepts of the Felton Diversion Fish Passage Improvements with a focus on long-term maintenance and environmentally-sustainable security.

Thank you for accepting my comments.

Sincerely,
Becky Steinbruner
3441 Redwood Drive
Aptos, CA 95003
831-685-2915
ki6tkb@yahoo.com

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# Appendix B

## Water Rights Petitions and Related Correspondence

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# Table of Contents

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# WATER RIGHTS PETITIONS

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Wagner&Bonsignore
Consulting Civil Engineers, A Corporation

Nicholas F. Bonsignore, P.E.
Robert C. Wagner, P.E.
Paula J. Whealen

Martin Berber, P.E.
Patrick W. Ervin, P.E.
David P. Lounsbury, P.E.
Vincent Maples, P.E.
Leah Orloff, Ph.D, P.E.
David H. Peterson, C.E.G., C.H.G.
Ryan E. Stolfus

January 6, 2021

Mr. Sam Boland-Brien
Supervising Engineer - Petition, Licensing & Registration
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

**Re: City of Santa Cruz**
**Petitions for Change and Extension of Time: Permits 16123 and 16601 (Applications A022318 and A023710 respectively)**
**Petitions for Change: Licenses 1553, 7200 and 9847 (Applications A004017, A005215 and A017913 respectively)**

Dear Mr. Boland-Brien:

In December 2006, the City of Santa Cruz filed Petitions for Extension of Time for Permits 16123 and 16601, and Petitions for Change for License 9847 and Permits 16123 and 16601 with the Division. The Division issued a Public Notice of these Petitions on October 8, 2008. Subsequently, the City determined that additional modifications were necessary and filed revised Petitions on these same rights on January 29, 2019 and again on August 5, 2020.

At this time, the City would like to amend its August 5, 2020 Petitions in their entirety and are submitting the enclosed amended Petitions for the referenced rights. The Petition revisions were made to respond to comments provided by you and your staff.

An Initial Study and Notice of Preparation of an Environmental Impact Report in support of the enclosed Petitions was issued by the City in 2018. The City is well into the preparation of a draft environmental impact report. Therefore, we request that these revised Petitions be issued for public notice as soon as possible to incorporate and/or address comments in the environmental document.

Enclosed are the executed Petitions, Underground Storage Supplements, Environmental Information forms, site photographs and accompanying map. In January 2019, Petition filing fees in the amount of $13,114.72 were submitted to the Division, with an $850 environmental fee for the California Department of Fish and Wildlife. Additional filing fees in the amount of $2,394.48

were submitted with the August 5, 2020 revised Petitions. We understand that no additional filing fees are due currently. I am also sending this letter and Petition package to you via email.

Please contact me if you have any questions regarding the enclosed Petitions.

Very truly yours,

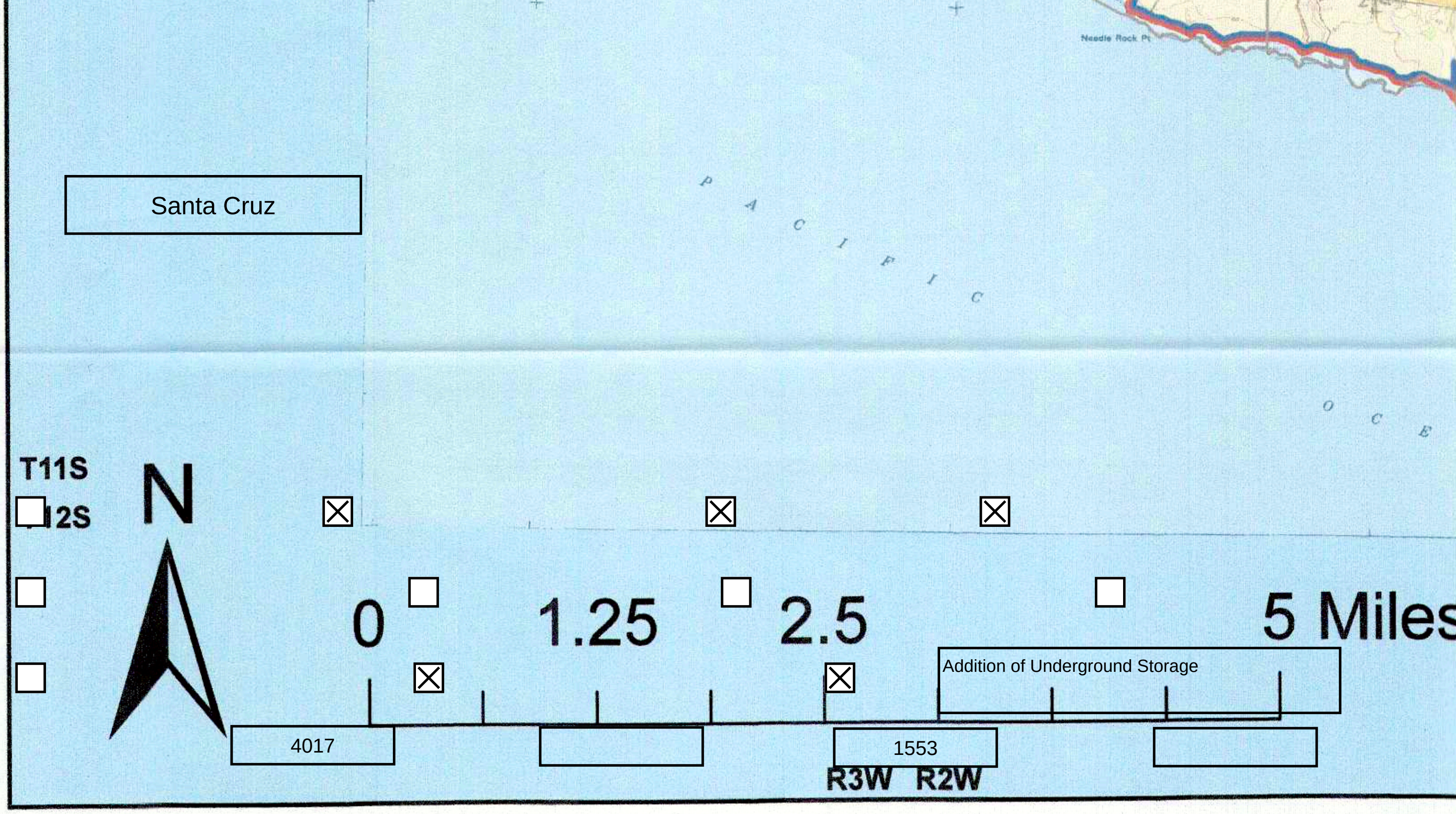
WAGNER & BONSIGNORE
CONSULTING CIVIL ENGINEERS

Paula J. Whealen

Paula J. Whealen, Principal

Encl.

cc: (via email)
- Rosemary Menard, City of Santa Cruz
- Chris Berry, City of Santa Cruz
- Ryan Bezerra, Bartkiewicz Kronick & Shanahan
- Randi Adair, California Department of Fish & Wildlife
- Amanda Morrison, NOAA National Marine Fisheries Service




See Attached

See Attached San Lorenzo River and Tributaries

## Water Service Areas

See Attached

See Attached

Central Water District

See Attached

See Attached

San Lorenzo Valley Water District

Scotts Valley Water District

Soquel Creek Water District

City of Santa Cruz' Service Area

City of Santa Cruz' North Coast Service Area

Places

Grour

**Temporary Urgency**
This temporary urgency change will be effective from [ ] to [ ].

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

**Instream Flow Dedication** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

Will the dedicated flow be diverted for consumptive use at a downstream location? ○ Yes ○ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

**Waste Water**
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ○ Yes ○ No

Will any legal user of the treated waste water discharged be affected? ○ Yes ○ No

**General Information** – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ○ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☒ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

Information in State Water Resources Control Board files.

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard
Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**
**(1) the form Environmental Information for Petitions, including required attachments, available at:**
**http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf**
**(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at:**
**http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/**
**(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)**

| Month | Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2] | | | | |
|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (wettest)* |
| Oct | <=459 | 460-539 | 540-709 | 710-875 | >875 |
| Nov | <=1186 | 1187-1497 | 1498-1827 | 1828-2485 | >2485 |
| Dec | <=2397 | 2398-3134 | 3135-5642 | 5643-10196 | >10196 |
| Jan | <=4322 | 4323-8456 | 8457-16694 | 16695-28019 | >28019 |
| Feb | <=8442 | 8443-16368 | 16369-29140 | 29141-42995 | >42995 |
| Mar | <=13004 | 13005-22948 | 22949-35371 | 35372-57968 | >57968 |
| Apr | <=14203 | 14204-24491 | 24492-39487 | 39488-67884 | >67884 |
| May | <=15448 | 15449-25279 | 25280-41659 | 41660-71412 | >71412 |
| Jun | <=16005 | 16006-26116 | 26117-43123 | 43124-73420 | >73420 |
| Jul | <=16364 | 16365-26819 | 26820-44073 | 44074-74718 | >74718 |
| Aug | <=16653 | 16654-27355 | 27356-44799 | 44800-75591 | >75591 |
| Sep | <=16978 | 16979-27843 | 27844-45398 | 45399-76368 | >76368 |

cfs = cubic feet per second

Notes:

1. The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.
2. To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.
   a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.
   b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.
   c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

## Agreed Flows for Tait Diversion on the San Lorenzo River, as Measured at the City Gage immediately downstream of Tait Diversion[1]

| | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[3] (cfs) | Smolt Outmigration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5* *(driest)* | *Hydrologic Condition 4* *(dry)* | *Hydrologic Condition 3* *(normal)* | *Hydrologic Condition 2* *(wet)* | *Hydrologic Condition 1* *(very wet)* | | | | |
| Jan | 8.0 | 8.0 | 15.8 | 16.4 | 17.5 | 17.0/25.2 | | | 10.0 |
| Feb | 8.0 | 8.0 | 15.9 | 16.7 | 18.0 | 17.0/25.2 | | | 10.0 |
| Mar | 8.0 | 8.0 | 16.3 | 17.3 | 18.2 | 17.0/25.2 | | | 10.0[4] |
| Apr | 8.0 | 8.0 | 17.2 | 17.9 | 18.4 | 17.0/25.2[5] | | | 10.0[4] |
| May | 8.0 | 8.0 | 17.7 | 18.2 | 18.5 | | | | 10.0[4] |
| Jun | 8.0 | 8.0 | 16.6 | 18.1 | 18.5 | | | | |
| Jul | 8.0 | 8.0 | 12.4 | 15.8 | 18.2 | | | | |
| Aug | 8.0 | 8.0 | 9.8 | 11.9 | 16.4 | | | | |
| Sep | 8.0 | 8.0 | 9.0 | 11.1 | 13.3 | | | | |
| Oct | 8.0 | 8.0 | 9.8 | 11.4 | 13.3 | | | | |
| Nov | 8.0 | 8.0 | 12.5 | 14.1 | 16.4 | | | | |
| Dec | 8.0 | 8.0 | 15.1 | 16.2 | 17.6 | 17.0/25.2 | | | |

cfs = cubic feet per second

Notes:

1. The required flow is determined by the life stage requiring the highest flow in any given month.
2. For adult migration, a lower threshold of 17.0 cfs and an upper threshold of 25.2 cfs when flow would be at this level without City diversion during December through April. May be reduced to 3 consecutive days a week if storage levels in Loch Lomond fall below the following levels in million gallons (mg): Dec-1900 mg; Jan-2000 mg; Feb-2100 mg; Mar-2200 mg. Further, adult migration flows may be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond fall below the following levels: Dec-1600 mg; Jan-1700 mg; Feb-1800 mg; Mar-1900 mg.
3. No spawning or incubation occurs in this reach.
4. During Hydrologic Condition 5, provided at least 3 days per week.
5. April adult migration flows provided only in Hydrologic Conditions 1-3.

# State Water Resources Control Board

## Division of Water Rights

1001 I Street • Sacramento, California 95814• (916) 341-5300
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 341-5400 • http://www.waterboards.ca.gov/waterrights

License 1553 (A004017)
License 7200 (A005215)
Permit 16123 (A022318)
Permit 16601 (A023710)

See Attached.

See Attached.

See Attached.

See Attached.

See Attached

Injection via aquifer storage and recovery wells in the Beltz Injection Well System.

See Attached.

Santa Cruz Mid-County Groundwater Sustainability Plan, November 2019.

See Attached.

See Attached.

Groundwater pumped from the Mid-County Groundwater Basin is used primarily for municipal purposes. The City believes that its proposed ASR injections would be the first active use of underground storage in the basin.

See Attached.

**Attachment to Underground Storage Supplement**

**City of Santa Cruz**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change and Underground Storage Supplements for the City's above existing water right Licenses and Permits. Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations and make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights. As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project. Detailed discussion of the underground storage project facilities and operations can be found in the City's EIR for this project.

**Item 1. State amount of water to be diverted to underground storage from each point of diversion.**
Water will be diverted from the Points of Diversion at the stated rates of diversion in each of the Permits and Licenses named above, and as sought by the accompanying Petitions for Change on these rights. Water will be diverted at Tait Street and Felton Diversion facilities, and rediverted to underground storage via the Beltz Injection Well Nos. 8, 9, 10 and 12, which will be added as Points of Rediversion to the Permits and Licenses named above. The Beltz Injection Well System has a maximum injection capacity of 2.1 mgd (or about 6.5 acre-feet / day), which would be the maximum rate of rediversion to underground storage. If the City were to inject continuously at this rate for a full year, the maximum annual rediversion to underground storage would be approximately 2,372.5 acre-feet (6.5 acre-feet/day x 365 days). No diversions to support rediversion of water to underground storage will occur during Hydrologic Condition 5, as defined in the Exceedance Category Limits Table attached to the referenced Petitions.

**Item 2. Describe any works used to divert to offstream spreading grounds or injection wells.**
Water will be diverted from the existing diversion facilities named as Points of Diversion in the referenced Permits and Licenses. Those facilities include the Felton Diversion and Tait Street Diversion, both located on the San Lorenzo River.

**Item 3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.**

Not applicable. Underground storage will be made via injection wells associated with the City's existing Beltz Wells system. The Beltz Injection Wells are located within the Santa Cruz Mid-County Groundwater Basin as shown on the Map to Accompany the Change Petitions, and described as follows:

<u>Points of Rediversion to Underground Storage</u>

- Well No. 8: Located N. 1813775 and E. 6132716 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 9: Located N. 1812135 and E. 6131318 California Coordinate System, Zone 3, being within the SW¼ of NE¼ of projected Section 21, T11S, R1W, MDB&M.
- Well No. 10: Located N. 1813446 and E. 6131683 California Coordinate System, Zone 3, being within the SW¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 12: Located N. 1820121and E. 6132941 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 9, T11S, R1W, MDB&M.

**Item 4. State depth of groundwater table in spreading ground or immediate vicinity.**

**Item 5. Give any historic give any historic maximum and/or minimum depths to the groundwater table in the area.**

The Santa Cruz Mid-County Groundwater Sustainability Plan Figures 2-24 through 2-26, and 2-28 through 2-31 (attached) show depths to groundwater in 2005 and 2016, respectively.

**Item 6: Describe proposed spreading operation.**

Not applicable. Underground storage will be made via injection wells.

**Item 7: Describe location, capacity and features of proposed pretreatment facilities and/or injection wells.**

The City proposes to use existing and new infrastructure to redivert water under its referenced Permits and Licenses to Underground Storage through ASR operations. That water will be available for use by the City in dry periods, as well as for *in situ* protection of groundwater quality from seawater intrusion. The injected water will be treated to drinking water standards prior to injection and would be injected into the Beltz Well System within the Santa Cruz Mid-County Groundwater Basin, as shown on the Map to Accompany the Petitions and consistent with the State Water Resources Control Board's general order for ASR programs, Water Quality Order 2012-0010.

**Item 9: Describe underground reservoir and attach a map or sketch of its location.**

The City has joined with Soquel Creek Water District, Central Water District, the County of Santa Cruz, and private well representatives to form the Santa Cruz Mid-County Groundwater Agency, the local groundwater sustainability agency created pursuant to the requirements of California's

Sustainable Groundwater Management Act (SGMA). The Santa Cruz Mid-County Groundwater Agency has overseen the preparation of a cooperative groundwater sustainability plan (GSP) for the now redefined Santa Cruz Mid-County Groundwater Basin. Information on the location, capacity, and existing uses of the underground storage basin can be found in the GSP. The GSP's Figure 1-1 is attached and shows the surface boundaries of the Mid-County Groundwater Basin.

**Item 10: State estimated storage capacity of underground storage reservoir.**
The Santa Cruz Mid-County Groundwater Sustainability Plan estimates the potential yield of the Soquel-Aptos Area as 5,900 acre-feet annually (approximately 4,400 af from the Purisima Formation and 1,500 af from the Aromas Red Sands).

**Item 12: Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage.**
Water injected into the Beltz Injection Wells and recovered for later use will be measured using flow meters installed on each Injection Well. The meters can measure the injection and recovery amounts daily.

License 1553 (A004017)
License 7200 (A005215)

State of California
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). <u>This form is not a CEQA document.</u> If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. <u>As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents.</u> Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

**DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED**

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

Insert the attachment number here, if applicable: 1

**Coordination with Regional Water Quality Control Board**

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: June 26, 2018

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ◯ Yes ◯ No

Will a waste discharge permit be required for the project? ◯ Yes ◯ No

If necessary, provide additional information below:

Improvements at the Felton Diversion Facility could require waste discharge requirements, or a waiver, from the Central Coast Regional Water Quality Control Board, as well as a 404 permit from the U.S. Army Corps of Engineers and/or a Streambed Alteration Agreement from the California Department of Fish & Wildlife. Those improvements, however, are not yet designed and finalized.

Insert the attachment number here, if applicable:

**Local Permits**

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact:

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: 

Date of Contact: October 3, 2018

Department: City of Santa Cruz - various depts

Phone Number: 

County Zoning Designation: Not Applicable - municipal lands

Are any county permits required for your project? If yes, indicate type below. ◯ Yes ◯ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ◯ Yes ◯ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Federal and State Permits**

Check any additional agencies that may require permits or other approvals for your project:

- [x] Regional Water Quality Control Board
- [x] Department of Fish and Game
- [ ] Dept of Water Resources, Division of Safety of Dams
- [ ] California Coastal Commission
- [ ] State Reclamation Board
- [x] U.S. Army Corps of Engineers
- [ ] U.S. Forest Service
- [ ] Bureau of Land Management
- [ ] Federal Energy Regulatory Commission
- [ ] Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ◉ No

For each agency from which a permit is required, provide the following information:

| Agency | Permit Type | Person(s) Contacted | Contact Date | Phone Number |
|---|---|---|---|---|
| CDFW | LSAA 1600 | Randi Adair | | |
| RWQCB | WDRs / waiver | Potential at this time | | |
| USACE | 404 permit | Potential at this time | | |

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Construction or Grading Activity**

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

### Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ○ Yes ◉ No

Will another public agency be preparing an archeological report? ○ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

### Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- ☒ Along the stream channel immediately downstream from each point of diversion
- ☒ Along the stream channel immediately upstream from each point of diversion
- ☒ At the place where water subject to this water right will be used

### Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

**All Water Right Holders Must Sign This Form:**
I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 7/28/2020 at Santa Cruz, CA .

Rosemary Menard

Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

**NOTE:**
- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

# City of Santa Cruz
# Photographs to Accompany Petitions

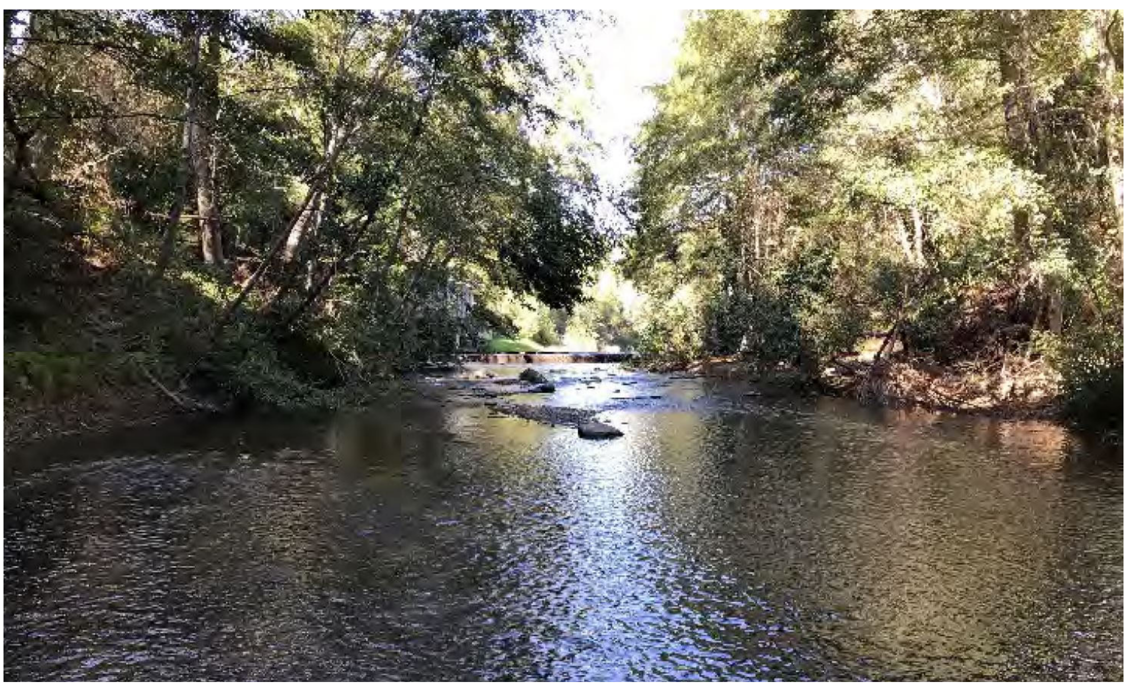
## Newell Creek & Loch Lomond Reservoir
## License 9847 (Application A017913)

## San Lorenzo River – Felton Diversion
## Permit 16123 (Application A022318)
## Permit 16601 (Application A023710)

## San Lorenzo River – Tait Street Diversion
## License 1553 (Application A004017)
## License 7200 (Application A005215)

FELTON DIVERSION FACILITY

MARCH 2009



FELTON DIVERSION FACILITY- LOOKING DOWNSTREAM

JANUARY 2019

FELTON DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

LOCH LOMOND LAKE- NEWELL DAM

JANUARY 2019

NEWELL CREEK- LOOKING DOWNSTREAM

FEBRUARY 2012

NEWELL CREEK- LOOKING UPSTREAM

AUGUST 2016

TAIT WELL 1B

JANUARY 2018

TAIT DIVERSION DAM

JANUARY 2019

TAIT DIVERSION FACILITY – LOOKING DOWNSTREAM

JANUARY 2019

TAIT DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation

Nicholas F. Bonsignore, P.E.
Robert C. Wagner, P.E.
Paula J. Whealen

Martin Berber, P.E.
Patrick W. Ervin, P.E.
David P. Lounsbury, P.E.
Vincent Maples, P.E.
Leah Orloff, Ph.D, P.E.
David H. Peterson, C.E.G., C.H.G.
Ryan E. Stolfus

January 6, 2021

Mr. Sam Boland-Brien
Supervising Engineer - Petition, Licensing & Registration
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

**Re: City of Santa Cruz**
**Petitions for Change and Extension of Time: Permits 16123 and 16601 (Applications A022318 and A023710 respectively)**
**Petitions for Change: Licenses 1553, 7200 and 9847 (Applications A004017, A005215 and A017913 respectively)**

Dear Mr. Boland-Brien:

In December 2006, the City of Santa Cruz filed Petitions for Extension of Time for Permits 16123 and 16601, and Petitions for Change for License 9847 and Permits 16123 and 16601 with the Division. The Division issued a Public Notice of these Petitions on October 8, 2008. Subsequently, the City determined that additional modifications were necessary and filed revised Petitions on these same rights on January 29, 2019 and again on August 5, 2020.

At this time, the City would like to amend its August 5, 2020 Petitions in their entirety and are submitting the enclosed amended Petitions for the referenced rights. The Petition revisions were made to respond to comments provided by you and your staff.

An Initial Study and Notice of Preparation of an Environmental Impact Report in support of the enclosed Petitions was issued by the City in 2018. The City is well into the preparation of a draft environmental impact report. Therefore, we request that these revised Petitions be issued for public notice as soon as possible to incorporate and/or address comments in the environmental document.

Enclosed are the executed Petitions, Underground Storage Supplements, Environmental Information forms, site photographs and accompanying map. In January 2019, Petition filing fees in the amount of $13,114.72 were submitted to the Division, with an $850 environmental fee for the California Department of Fish and Wildlife. Additional filing fees in the amount of $2,394.48

were submitted with the August 5, 2020 revised Petitions. We understand that no additional filing fees are due currently. I am also sending this letter and Petition package to you via email.

Please contact me if you have any questions regarding the enclosed Petitions.

Very truly yours,

WAGNER & BONSIGNORE
CONSULTING CIVIL ENGINEERS

Paula J. Whealen

Paula J. Whealen, Principal

Encl.

cc: (via email)
Rosemary Menard, City of Santa Cruz
Chris Berry, City of Santa Cruz
Ryan Bezerra, Bartkiewicz Kronick & Shanahan
Randi Adair, California Department of Fish & Wildlife
Amanda Morrison, NOAA National Marine Fisheries Service

Please indicate County where your project is located here:

Santa Cruz

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701
☒ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☒ **Place of Use** Wat. Code, § 1701
☒ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☐ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☒ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☒ **Other** Addition of Underground Storage

Application: 4017 Permit: License: 1553 Statement:

I (we) hereby petition for change(s) noted above and described as follows:

**Point of Diversion or Rediversion** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present: See Attached

Proposed: See Attached

**Place of Use** – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present: See Attached

Proposed: See Attached

**Purpose of Use**

Present: See Attached

Proposed: See Attached

**Split**

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

**Distribution of Storage**

Present:

Proposed:

**Temporary Urgency**
This temporary urgency change will be effective from [ ] to [ ].

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

**Instream Flow Dedication** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

Will the dedicated flow be diverted for consumptive use at a downstream location? ◯ Yes ◯ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

**Waste Water**
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ◯ Yes ◯ No

Will any legal user of the treated waste water discharged be affected? ◯ Yes ◯ No

**General Information** – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ◯ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☒ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

Information in State Water Resources Control Board files.

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard
Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**
**(1) the form Environmental Information for Petitions, including required attachments, available at:**
**http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf**
**(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at:**
**http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/**
**(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)**

**City of Santa Cruz**

**Attachment to Petitions for Change**
**License 1553 (Application A004017)**
**License 7200 (Application A005215)**
**Tait Street Diversion Facility**

## Point of Diversion or Rediversion

*Present:* Tait Street Diversion Dam: N. 25 degrees 00' E., 196.53 feet thence 65 degrees 00' W., from point of intersection of the eastern line of River Street with northwestern line of Crossing Street; being within SE1/4 of NW1/4 of projected Section 12, T1lS, R2W, MDB&M.

Well No. 1 (License 1553 only): N. 25 degrees 00' E., 150 feet thence S. 65 degrees 00' E., 116 feet from the point of intersection of eastern line of River Street with southeastern line of Crossing street; being within SE1/4 of NW1/4 of projected Section 12, TllS, R2W, MDB&M.

Well No. 2: On southern line of Crossing Street, 461 feet westerly from the point of intersection of the western line of Ocean Street with the southern line of Crossing Street; being within the NE ¼ of NW ¼ of projected Section 12, T 11 S, R 2 W, MDB&M.

Well No.3: On southern line of Crossing Street, 270 westerly from point of intersection of the western line of Ocean Street with the southern line of Crossing Street, being within NE1/4 of NW1/4 of projected Section 12, TllS, R2W, MD13&M.

Well No.4: S. 72 degrees 40' W., 322.58 feet thence N. 17 degrees 20' W., 135 feet from the point of intersection of northern line of Crossing Street with western line of Ocean Street; being within NE1/4 of NW1/4 of projected Section 12, TllS, R2W,MDB&M.

*Proposed:*[1] Tait Diversion - Points of Direct Diversion and Diversion to Underground Storage

- Diversion Dam: Located N. 1822800 and E. 6114450 California Coordinate System, Zone 3, being within the SE¼ of the NW¼ of Section 12, T11S, R2W, MDB&M.
- Well No. 1: Located N. 1822992 and E. 6114627 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 2: Located N. 1823057 and E. 6114826 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 3: Located N. 1823218 and E. 6114695 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 4: Located N. 1822953 and E. 6114494 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.

[1] There is no change in the physical existing Point of Diversion locations. The descriptions have been revised to provide California Coordinate System, Zone 3 coordinate points.

Beltz Injection Wells – Points of Rediversion to Underground Storage:

- Well No. 8: Located N.1813775 and E.6132716 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 9: Located N.1812135 and E.6131318 California Coordinate System, Zone 3, being within the SW¼ of NE¼ of projected Section 21, T11S, R1W, MDB&M.
- Well No. 10: Located N.1813446 and E.6131683 California Coordinate System, Zone 3, being within the SW¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 12: Located N.1820121 and E.6132941 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 9, T11S, R1W, MDB&M.

**Method of Diversion**

*Current*: License 1553: Direct diversion of 6.2 cubic feet per second
License 7200: Direct diversion of 6.0 cubic feet per second

*Proposed*: License 1553: Direct diversion and diversion to underground storage of 6.2 cubic feet per second
License 7200: Direct diversion and diversion to underground storage of 6.0 cubic feet per second
Licenses 1553 and 7200: Rediversion to underground storage at Beltz Injection Wells.

**Underground Storage**

*Proposed:* The City proposes to add Underground Storage via injection of surface water and subsequent recovery at the Beltz Injection Wells.

**Place of Use**

*Present:* License 1553: A description of the lands or the place where such water is put to beneficial use is as follows: The City of Santa Cruz, and that area east of the City of Santa Cruz, bounded on the west by the eastern boundary of the City of Santa Cruz, on the south by the Bay of Monterey, on the east by the eastern line of 41st Avenue and a line from the intersection of the eastern line of 41st Avenue with the southern line of the Santa Cruz-Watsonville Highway at a right angle to said southern line of Santa Cruz-Watsonville Highway extending to the north boundary of Section 9, T11S, R1W, MDB&M; and bounded on the north by the north boundary of Sections 8 and 9, T11S, R1W, MDB&M; as shown on map entitled "Map to Accompany Petition to Amend Application 4017, Permit 2372 to Appropriate Waters of the San Lorenzo River for Area outside of the City of Santa Cruz" filed April 15, 1935, with the Division of Water Resources.

License 7200: Within the boundaries of the City of Santa Cruz and environs as shown on map filed withStateWater Rights Board on October 14, 1963, and being within projected sections of the public land survey as follows:
Sections 29, 31, and 32, Tl0S, RlW, MDB&M.
Sections 5,6,7,8,9,10,15,16,17,18,19,20,and 21,TllS, RlW, MDB&M.
Sections 35 and 36, Tl0S, R2W, MDB&M.
Sections 1, 2, 10, 11, 12, 13,14, 15, 22, 23, 24, 26, and 27, TllS, R2W, MDB&M.

*Proposed:* Licenses 1553 and 7200:
At Loch Lomond Reservoir, and in City of Santa Cruz Water District, including its North Coast service area; the service areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District and Soquel Creek Water District; the Santa Cruz Mid-County Groundwater Basin (DWR Bulletin 118 Basin No. 3-001) and Santa Margarita Groundwater Basin (DWR Bulletin 118 Basin No. 3-027); all as shown on a map filed with State Water Resources Control Board accompanying this Petition.

**Purpose of Use**

*Present:* Municipal and domestic

*Proposed:* Municipal, domestic, industrial, recreational, fire protection and protection of water quality

**Diversion Rate**

*Present:* License 1553 – Maximum rate of diversion shall not exceed 6.2 cfs
License 7200 – Maximum rate of diversion shall note exceed 6 cfs

*Proposed:* The combined rate of direct diversion and diversion to underground storage shall not exceed 12.2 cfs.

**Terms and Conditions**
*Proposed:*

1) The City will provide bypass at Tait Diversion Facilities according to the minimum streamflow schedule negotiated among the City, the National Marine Fisheries Service and the California Department of Fish & Wildlife, as shown on the attached schedule.

2) No diversions under this right for rediversion to underground storage will occur during Hydrologic Condition 5, defined in the attached Exceedance Category Limits Table.

3) No delivery of water diverted under this right for use by a water supplier other than the City of Santa Cruz Water Department will occur during Hydrologic Conditions 4 and 5, as defined in the attached Exceedance Category Limits Table.

**Reason for Proposed Change**

Modification of the City of Santa Cruz' rights are necessary to better utilize surface water within existing allocations, increase the flexibility of the City's water supply, and extend time to beneficially use water allowed under existing rights, in light of, among other things, significant water conservation measures.

| Month | Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2] | | | | |
|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (wettest)* |
| Oct | <=459 | 460-539 | 540-709 | 710-875 | >875 |
| Nov | <=1186 | 1187-1497 | 1498-1827 | 1828-2485 | >2485 |
| Dec | <=2397 | 2398-3134 | 3135-5642 | 5643-10196 | >10196 |
| Jan | <=4322 | 4323-8456 | 8457-16694 | 16695-28019 | >28019 |
| Feb | <=8442 | 8443-16368 | 16369-29140 | 29141-42995 | >42995 |
| Mar | <=13004 | 13005-22948 | 22949-35371 | 35372-57968 | >57968 |
| Apr | <=14203 | 14204-24491 | 24492-39487 | 39488-67884 | >67884 |
| May | <=15448 | 15449-25279 | 25280-41659 | 41660-71412 | >71412 |
| Jun | <=16005 | 16006-26116 | 26117-43123 | 43124-73420 | >73420 |
| Jul | <=16364 | 16365-26819 | 26820-44073 | 44074-74718 | >74718 |
| Aug | <=16653 | 16654-27355 | 27356-44799 | 44800-75591 | >75591 |
| Sep | <=16978 | 16979-27843 | 27844-45398 | 45399-76368 | >76368 |

cfs = cubic feet per second

Notes:

1. The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.
2. To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.
   a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.
   b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.
   c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

Agreed Flows for Tait Diversion on the San Lorenzo River,
as Measured at the City Gage immediately downstream of Tait Diversion[1]

| | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[3] (cfs) | Smolt Outmigration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5* *(driest)* | *Hydrologic Condition 4* *(dry)* | *Hydrologic Condition 3* *(normal)* | *Hydrologic Condition 2* *(wet)* | *Hydrologic Condition 1* *(very wet)* | | | | |
| Jan | 8.0 | 8.0 | 15.8 | 16.4 | 17.5 | 17.0/25.2 | | | 10.0 |
| Feb | 8.0 | 8.0 | 15.9 | 16.7 | 18.0 | 17.0/25.2 | | | 10.0 |
| Mar | 8.0 | 8.0 | 16.3 | 17.3 | 18.2 | 17.0/25.2 | | | 10.0[4] |
| Apr | 8.0 | 8.0 | 17.2 | 17.9 | 18.4 | 17.0/25.2[5] | | | 10.0[4] |
| May | 8.0 | 8.0 | 17.7 | 18.2 | 18.5 | | | | 10.0[4] |
| Jun | 8.0 | 8.0 | 16.6 | 18.1 | 18.5 | | | | |
| Jul | 8.0 | 8.0 | 12.4 | 15.8 | 18.2 | | | | |
| Aug | 8.0 | 8.0 | 9.8 | 11.9 | 16.4 | | | | |
| Sep | 8.0 | 8.0 | 9.0 | 11.1 | 13.3 | | | | |
| Oct | 8.0 | 8.0 | 9.8 | 11.4 | 13.3 | | | | |
| Nov | 8.0 | 8.0 | 12.5 | 14.1 | 16.4 | | | | |
| Dec | 8.0 | 8.0 | 15.1 | 16.2 | 17.6 | 17.0/25.2 | | | |

cfs = cubic feet per second

Notes:

1. The required flow is determined by the life stage requiring the highest flow in any given month.
2. For adult migration, a lower threshold of 17.0 cfs and an upper threshold of 25.2 cfs when flow would be at this level without City diversion during December through April. May be reduced to 3 consecutive days a week if storage levels in Loch Lomond fall below the following levels in million gallons (mg): Dec-1900 mg; Jan-2000 mg; Feb-2100 mg; Mar-2200 mg. Further, adult migration flows may be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond fall below the following levels: Dec-1600 mg; Jan-1700 mg; Feb-1800 mg; Mar-1900 mg.
3. No spawning or incubation occurs in this reach.
4. During Hydrologic Condition 5, provided at least 3 days per week.
5. April adult migration flows provided only in Hydrologic Conditions 1-3.

**Linda S. Adams**
*Acting Secretary for Environmental Protection*

# State Water Resources Control Board

## Division of Water Rights

1001 I Street • Sacramento, California 95814• (916) 341-5300
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 341-5400 • http://www.waterboards.ca.gov/waterrights

**Edmund G. Brown Jr.**
*Governor*

License 1553 (A004017)
License 7200 (A005215)
Permit 16123 (A022318)
Permit 16601 (A023710)

**APPLICATION NO.** ______________
(Leave blank)

### UNDERGROUND STORAGE SUPPLEMENT TO APPLICATION TO APPROPRIATE WATER BY PERMIT

1. State amount of water to be diverted to underground storage from each point of diversion in item 3b of form APP.

See Attached.

a. Maximum Rate of diversions (1) __________ (2) __________ (3) __________ cfs
b. Maximum Annual Amount (1) __________ (2) __________ (3) __________ acre-feet

2. Describe any works used to divert to offstream spreading grounds or injection wells not identified in item 7 of form APP.

See Attached.

3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.

See Attached.

4. State depth of groundwater table in spreading grounds or immediate vicinity:
See Attached. feet below ground surface on __________ 19 __ measured at a point located within the _____ ¼ of _____ ¼ of Section _____, T _____, R _____, _____ B&M

5. Give any historic maximum and or minimum depths to the groundwater table in the area.

Location See Attached Maximum _________ feet below ground surface on _________ (date)
Location _________ Maximum _________ feet below ground surface on _________ (date)

6. Describe proposed spreading operation.

Injection via aquifer storage and recovery wells in the Beltz Injection Well System.

7. Describe location, capacity and features of proposed pretreatment facilities and/or injected wells.

See Attached.

8. Reference any available engineering reports, studies, or data on the aquifer involved.

Santa Cruz Mid-County Groundwater Sustainability Plan, November 2019.

9. Describe underground reservoir and attach a map or sketch of its location.

See Attached.

10. State estimated storage capacity of underground reservoir.

See Attached.

11. Describe existing use of the underground storage reservoir and any proposed change in its use.

Groundwater pumped from the Mid-County Groundwater Basin is used primarily for municipal purposes. The City believes that its proposed ASR injections would be the first active use of underground storage in the basin.

12. Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage.

See Attached.

**Attachment to Underground Storage Supplement**

**City of Santa Cruz**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change and Underground Storage Supplements for the City's above existing water right Licenses and Permits. Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations and make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights. As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project. Detailed discussion of the underground storage project facilities and operations can be found in the City's EIR for this project.

**Item 1. State amount of water to be diverted to underground storage from each point of diversion.**

Water will be diverted from the Points of Diversion at the stated rates of diversion in each of the Permits and Licenses named above, and as sought by the accompanying Petitions for Change on these rights. Water will be diverted at Tait Street and Felton Diversion facilities, and rediverted to underground storage via the Beltz Injection Well Nos. 8, 9, 10 and 12, which will be added as Points of Rediversion to the Permits and Licenses named above. The Beltz Injection Well System has a maximum injection capacity of 2.1 mgd (or about 6.5 acre-feet / day), which would be the maximum rate of rediversion to underground storage. If the City were to inject continuously at this rate for a full year, the maximum annual rediversion to underground storage would be approximately 2,372.5 acre-feet (6.5 acre-feet/day x 365 days). No diversions to support rediversion of water to underground storage will occur during Hydrologic Condition 5, as defined in the Exceedance Category Limits Table attached to the referenced Petitions.

**Item 2. Describe any works used to divert to offstream spreading grounds or injection wells.**

Water will be diverted from the existing diversion facilities named as Points of Diversion in the referenced Permits and Licenses. Those facilities include the Felton Diversion and Tait Street Diversion, both located on the San Lorenzo River.

**Item 3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.**

Not applicable. Underground storage will be made via injection wells associated with the City's existing Beltz Wells system. The Beltz Injection Wells are located within the Santa Cruz Mid-County Groundwater Basin as shown on the Map to Accompany the Change Petitions, and described as follows:

<u>Points of Rediversion to Underground Storage</u>

- Well No. 8: Located N. 1813775 and E. 6132716 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 9: Located N. 1812135 and E. 6131318 California Coordinate System, Zone 3, being within the SW¼ of NE¼ of projected Section 21, T11S, R1W, MDB&M.
- Well No. 10: Located N. 1813446 and E. 6131683 California Coordinate System, Zone 3, being within the SW¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 12: Located N. 1820121and E. 6132941 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 9, T11S, R1W, MDB&M.

**Item 4. State depth of groundwater table in spreading ground or immediate vicinity.**

**Item 5. Give any historic give any historic maximum and/or minimum depths to the groundwater table in the area.**

The Santa Cruz Mid-County Groundwater Sustainability Plan Figures 2-24 through 2-26, and 2-28 through 2-31 (attached) show depths to groundwater in 2005 and 2016, respectively.

**Item 6: Describe proposed spreading operation.**

Not applicable. Underground storage will be made via injection wells.

**Item 7: Describe location, capacity and features of proposed pretreatment facilities and/or injection wells.**

The City proposes to use existing and new infrastructure to redivert water under its referenced Permits and Licenses to Underground Storage through ASR operations. That water will be available for use by the City in dry periods, as well as for *in situ* protection of groundwater quality from seawater intrusion. The injected water will be treated to drinking water standards prior to injection and would be injected into the Beltz Well System within the Santa Cruz Mid-County Groundwater Basin, as shown on the Map to Accompany the Petitions and consistent with the State Water Resources Control Board's general order for ASR programs, Water Quality Order 2012-0010.

**Item 9: Describe underground reservoir and attach a map or sketch of its location.**

The City has joined with Soquel Creek Water District, Central Water District, the County of Santa Cruz, and private well representatives to form the Santa Cruz Mid-County Groundwater Agency, the local groundwater sustainability agency created pursuant to the requirements of California's

Sustainable Groundwater Management Act (SGMA). The Santa Cruz Mid-County Groundwater Agency has overseen the preparation of a cooperative groundwater sustainability plan (GSP) for the now redefined Santa Cruz Mid-County Groundwater Basin. Information on the location, capacity, and existing uses of the underground storage basin can be found in the GSP. The GSP's Figure 1-1 is attached and shows the surface boundaries of the Mid-County Groundwater Basin.

**Item 10: State estimated storage capacity of underground storage reservoir.**
The Santa Cruz Mid-County Groundwater Sustainability Plan estimates the potential yield of the Soquel-Aptos Area as 5,900 acre-feet annually (approximately 4,400 af from the Purisima Formation and 1,500 af from the Aromas Red Sands).

**Item 12: Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage.**
Water injected into the Beltz Injection Wells and recovered for later use will be measured using flow meters installed on each Injection Well. The meters can measure the injection and recovery amounts daily.

groundwater elevations below sea level. Hydrographs of Aromas and Purisima F-unit wells on Figure 2-17 show that groundwater elevations along the coast were very close to sea level thereby continuing to increase the threat of seawater intrusion in this area.

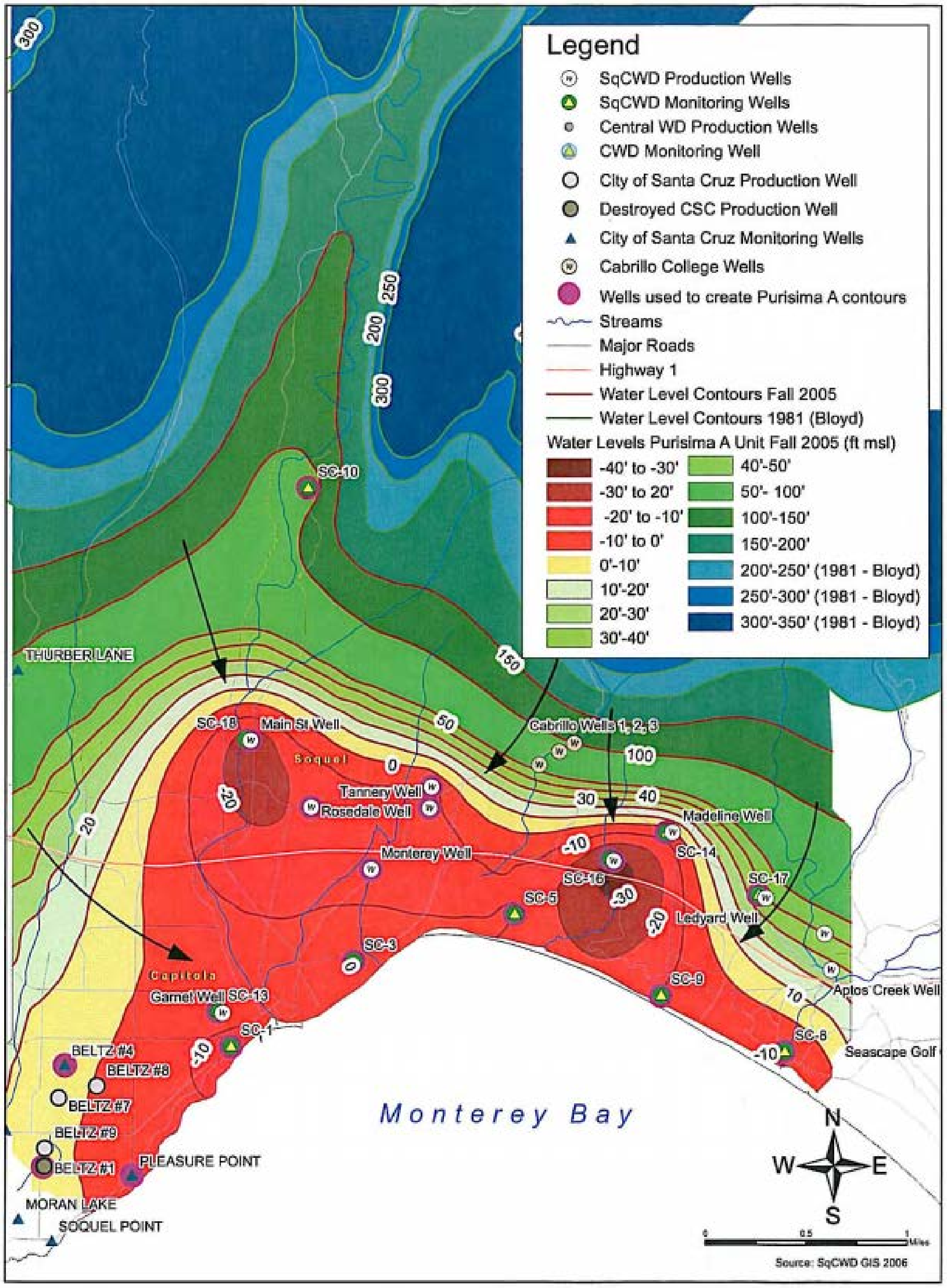



**Figure 2-24. Groundwater Elevation Contours in Purisima A-Unit, Fall 2005**

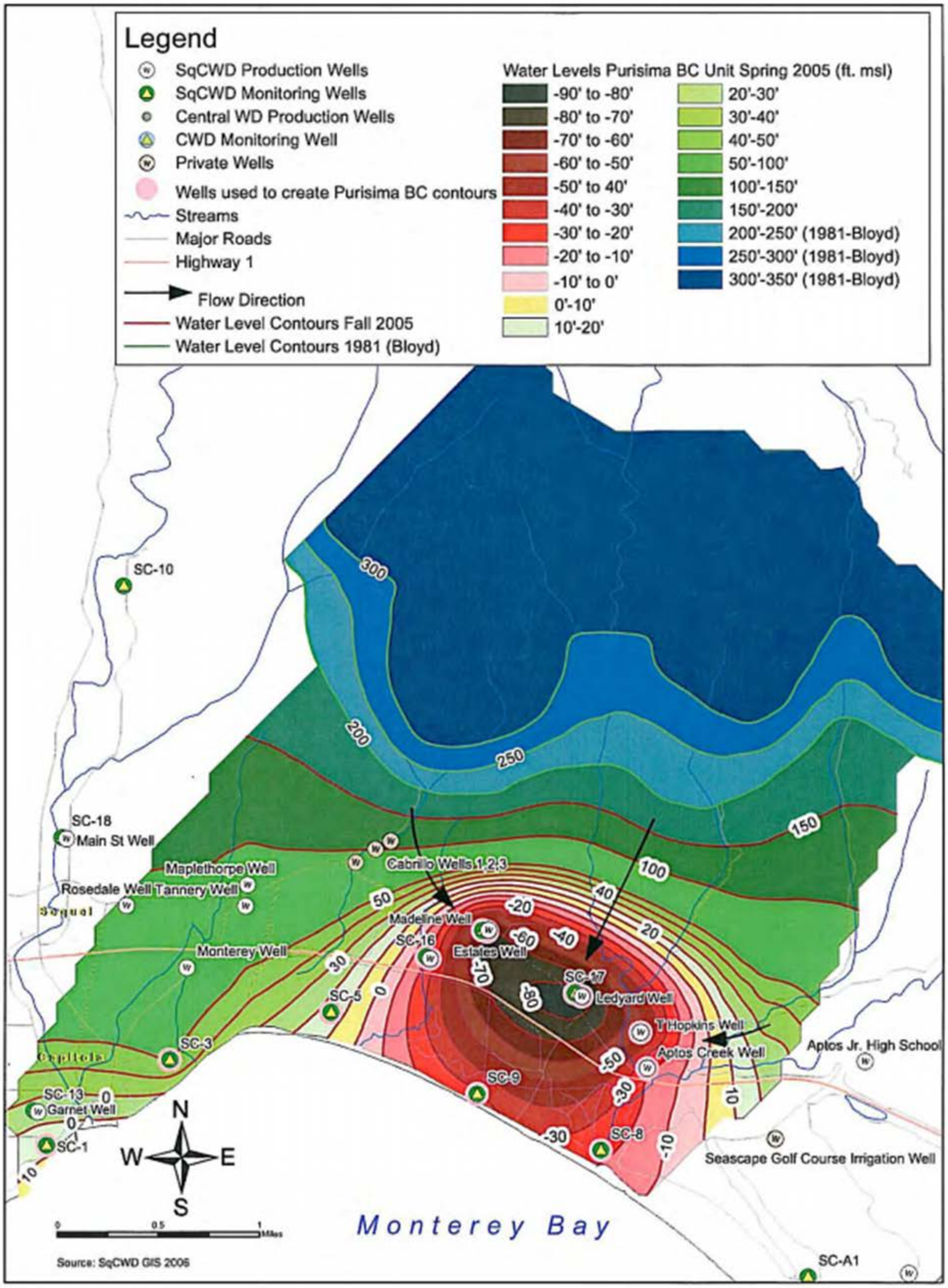



**Figure 2-25. Groundwater Elevation Contours in Purisima BC- Unit, Fall 2005**

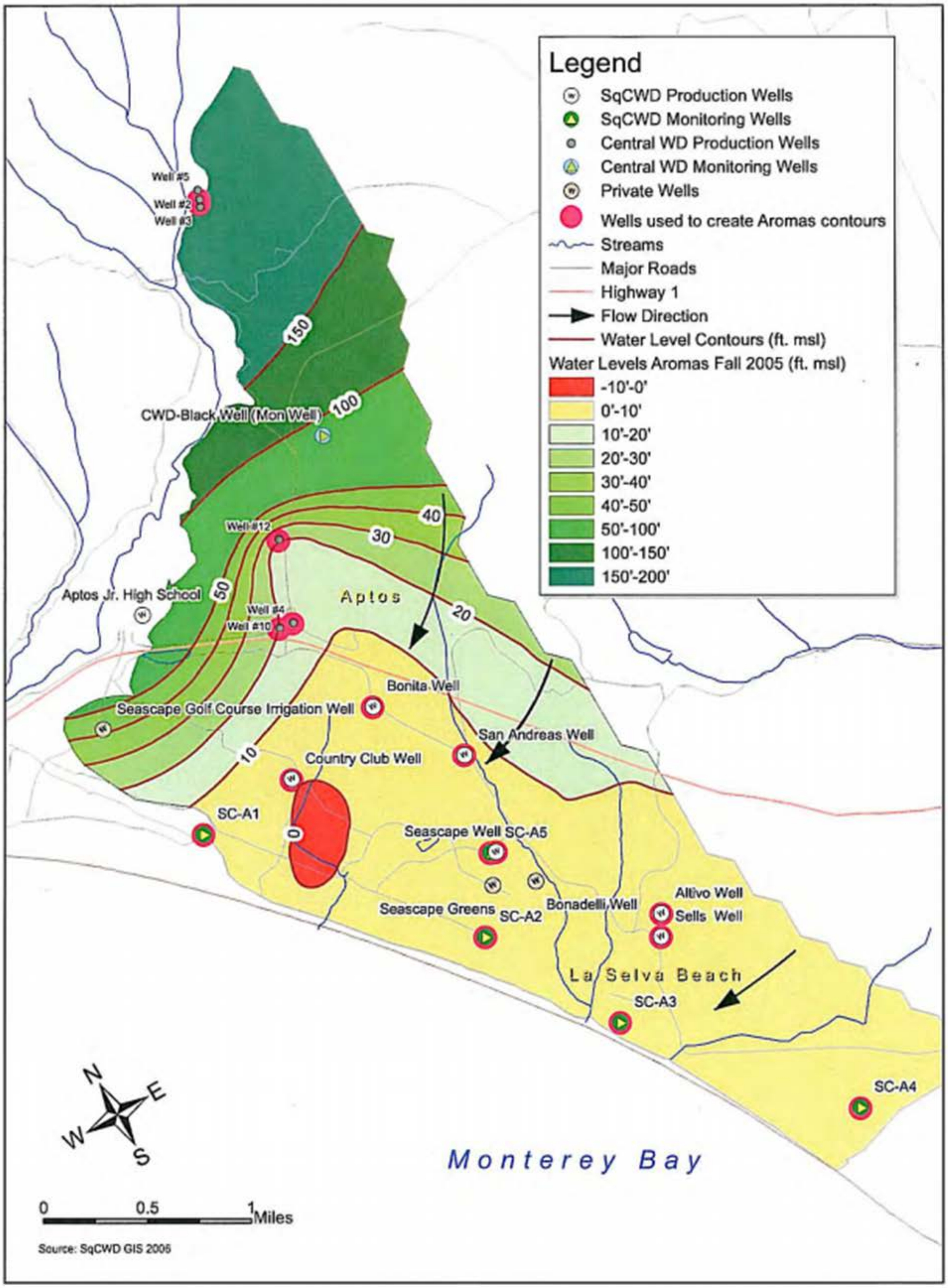



**Figure 2-26. Groundwater Elevation Contours in Aromas Red Sands and Pursima F-Unit, Fall 2005**

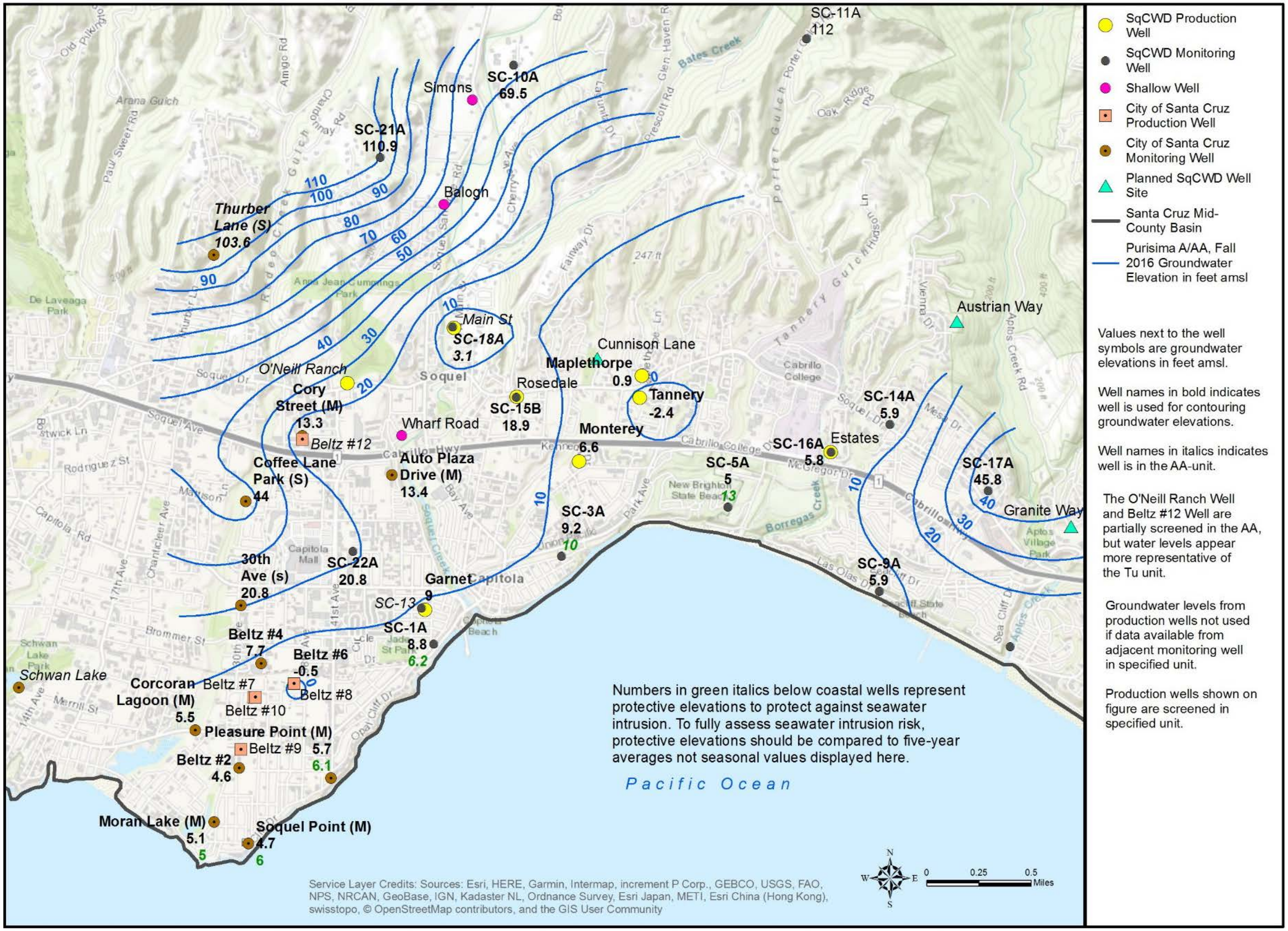



**Figure 2-28. Groundwater Elevation Contours in Purisima A and AA-Unit, Fall 2016**

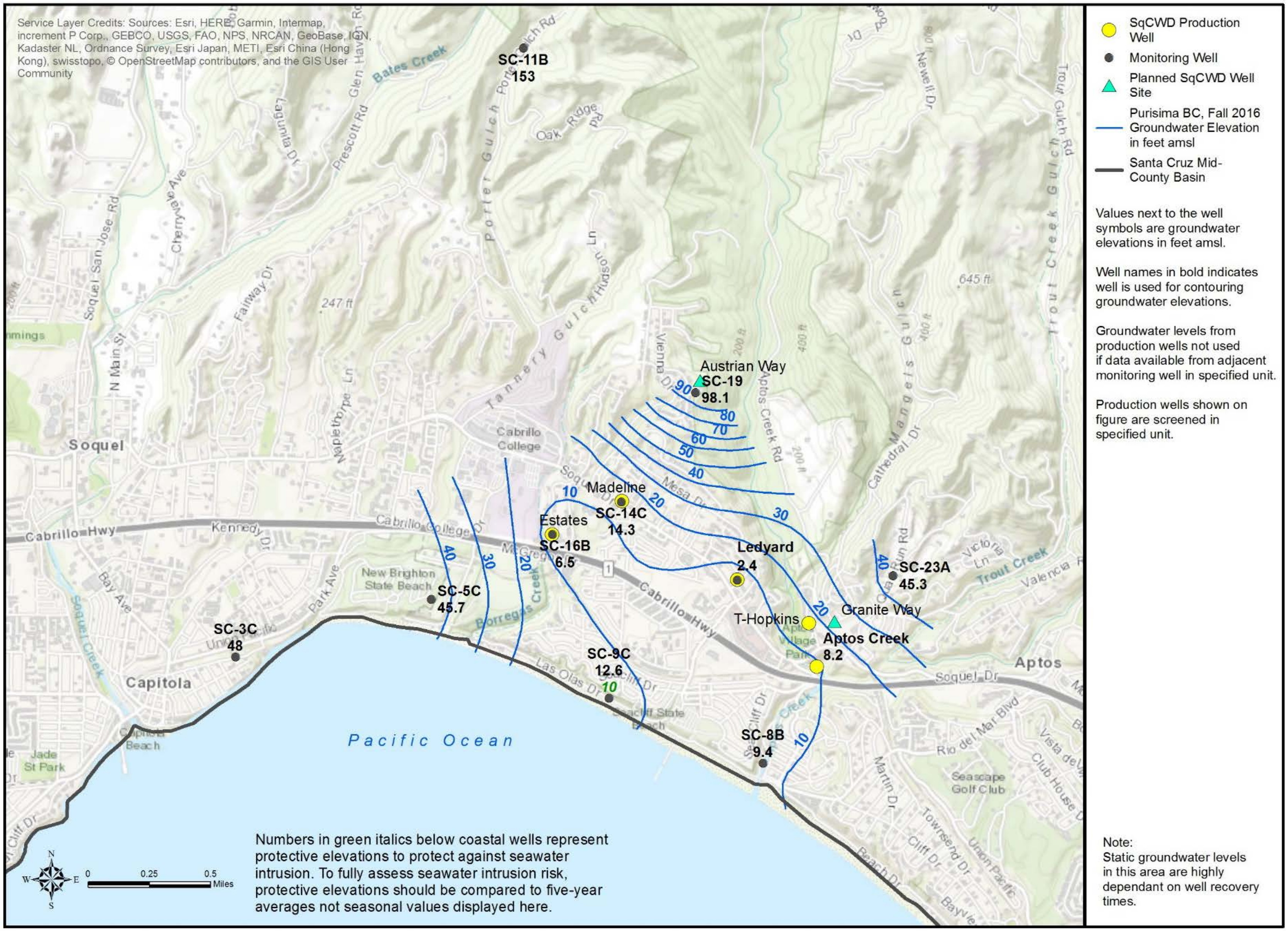
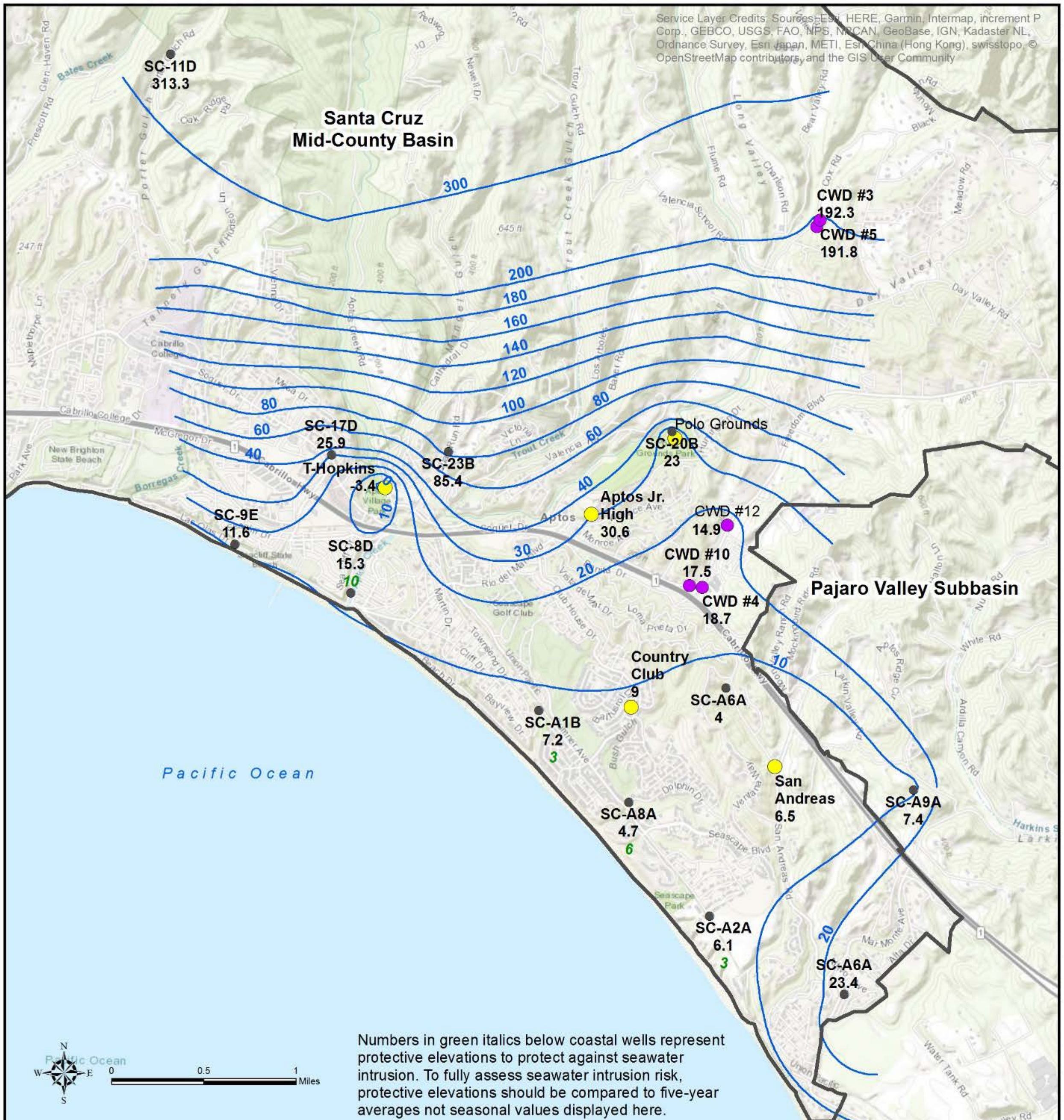



Figure 2-29. Groundwater Elevation Contours in Purisima BC-Unit, Fall 2016




CWD Production Well
Monitoring Well
SqCWD Production Well
Santa Cruz Mid-County Basin
Purisima DEF/F Units Groundwater Elevation Fall 2016

Groundwater levels from production wells not used if data available from adjacent monitoring well in specified unit.

Production wells shown on figure are screened in specified unit.

Values next to the well symbols are groundwater elevations in feet amsl.

Well names in bold indicates well is used for contouring groundwater elevations.

**Figure 2-30. Groundwater Elevation Contours in Purisima DEF/F-Unit, Fall 2016**

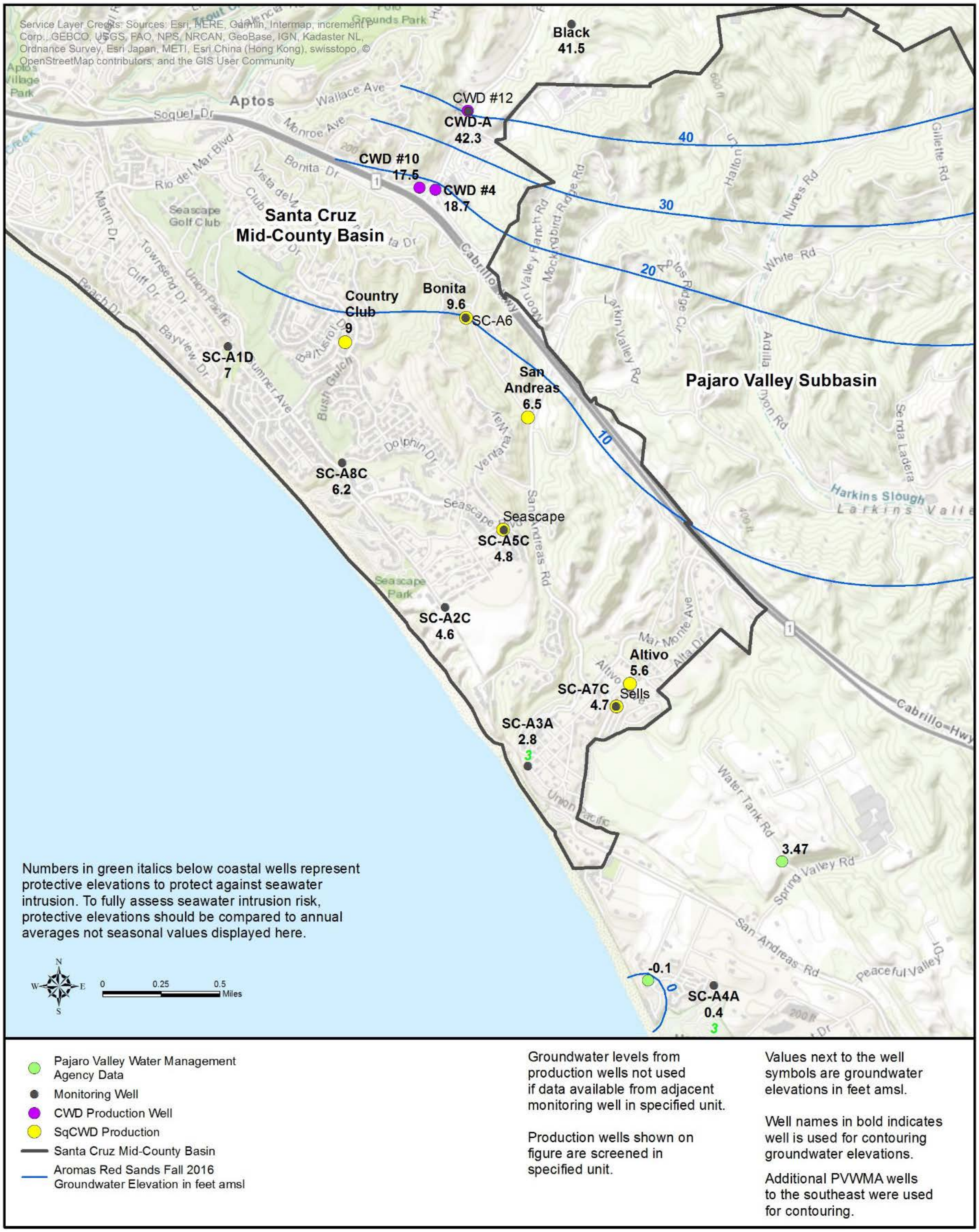



**Figure 2-31. Groundwater Elevation Contours in the Aromas Area, Fall 2016**

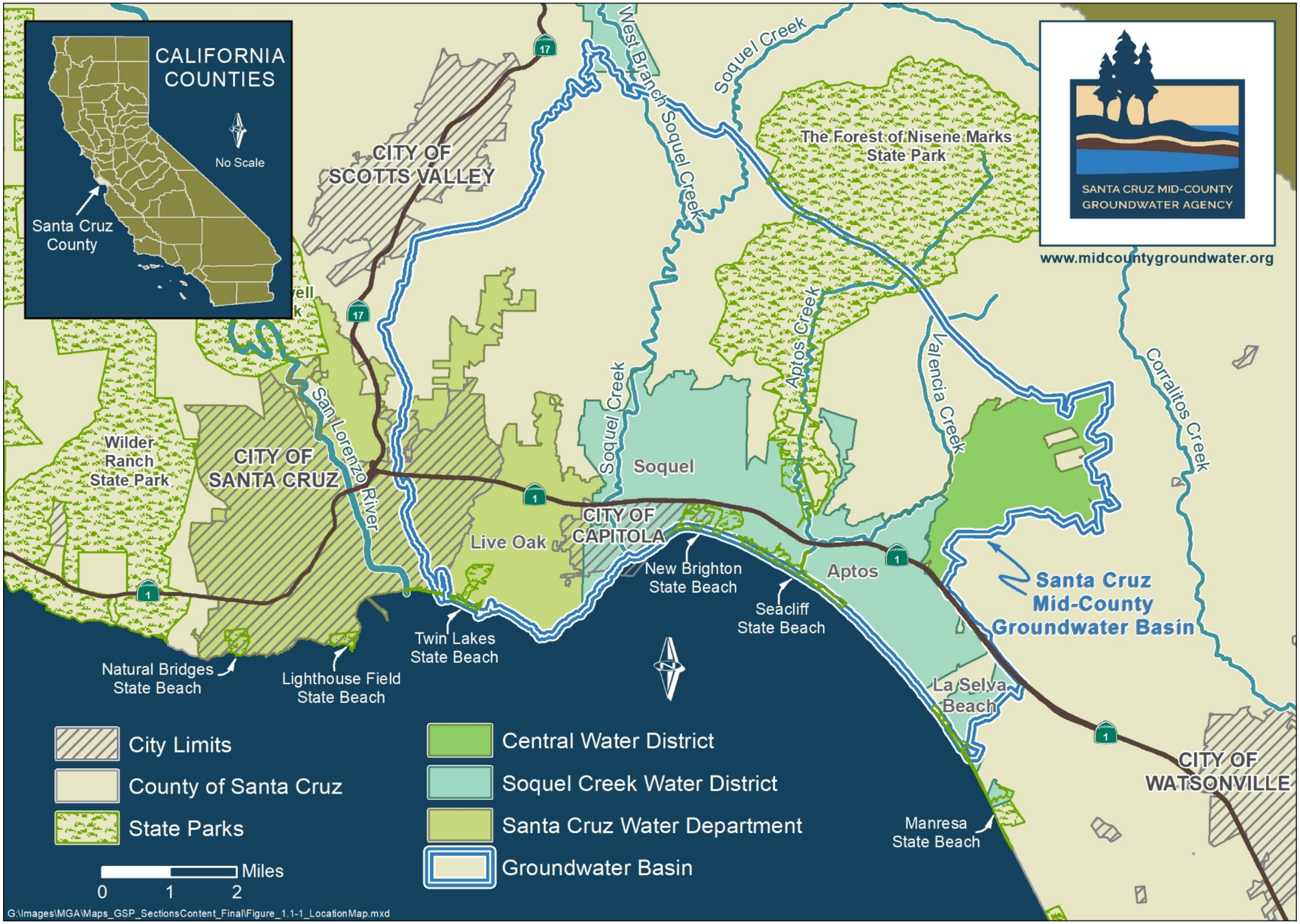



**Figure 1-1. Basin Location Map**

License 1553 (A004017)
License 7200 (A005215)

State of California
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

## DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

Insert the attachment number here, if applicable: 1

**Coordination with Regional Water Quality Control Board**

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: June 26, 2018

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ◯ Yes ◯ No

Will a waste discharge permit be required for the project? ◯ Yes ◯ No

If necessary, provide additional information below:

Improvements at the Felton Diversion Facility could require waste discharge requirements, or a waiver, from the Central Coast Regional Water Quality Control Board, as well as a 404 permit from the U.S. Army Corps of Engineers and/or a Streambed Alteration Agreement from the California Department of Fish & Wildlife. Those improvements, however, are not yet designed and finalized.

Insert the attachment number here, if applicable:

**Local Permits**

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact:

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted:

Date of Contact: October 3, 2018

Department: City of Santa Cruz - various depts

Phone Number:

County Zoning Designation: Not Applicable - municipal lands

Are any county permits required for your project? If yes, indicate type below. ◯ Yes ◯ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ◯ Yes ◯ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Federal and State Permits**

Check any additional agencies that may require permits or other approvals for your project:

- [x] Regional Water Quality Control Board
- [x] Department of Fish and Game
- [ ] Dept of Water Resources, Division of Safety of Dams
- [ ] California Coastal Commission
- [ ] State Reclamation Board
- [x] U.S. Army Corps of Engineers
- [ ] U.S. Forest Service
- [ ] Bureau of Land Management
- [ ] Federal Energy Regulatory Commission
- [ ] Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

For each agency from which a permit is required, provide the following information:

| Agency | Permit Type | Person(s) Contacted | Contact Date | Phone Number |
|---|---|---|---|---|
| CDFW | LSAA 1600 | Randi Adair | | |
| RWQCB | WDRs / waiver | Potential at this time | | |
| USACE | 404 permit | Potential at this time | | |

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Construction or Grading Activity**

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

## Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ○ Yes ◉ No

Will another public agency be preparing an archeological report? ○ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

## Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- ☒ Along the stream channel immediately downstream from each point of diversion
- ☒ Along the stream channel immediately upstream from each point of diversion
- ☒ At the place where water subject to this water right will be used

## Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

**All Water Right Holders Must Sign This Form:**
I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard
Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

**NOTE:**
- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

**Attachment to Environmental Information Form**
**City of Santa Cruz**

**License 9847 (Application A017913) – Newell Creek & Loch Lomond Reservoir**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change for all of the City's above referenced water right Licenses and Permits and Petitions for Extension of Time for the Felton Diversion Facility Permits 16123 and 16601. The Proposed Project also includes Petitions for Underground Storage for Licenses 1553 and 7200 and Permits 16123 and 16601.

Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations, make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights.

***Attachment No. 1***
**I. Description of Proposed Changes or Work Remaining to be Completed**

*Addition of Direct Diversion as a Method of Diversion:*
The City is seeking approval of Petitions that would explicitly state direct diversion as a method of diversion from the San Lorenzo River (also known as the Felton Diversion Facility) under Permits 16123 and 16601 and from Newell Creek at the City's Newell Creek Dam, which impounds Loch Lomond Reservoir, under License 9847. Currently, these rights authorize diversion to storage in the Loch Lomond Reservoir, but do not explicitly state the right to take water by direct diversion; an oversight in the original filings. The City has calculated that the licensed amount of use under License 9847 would not have been possible without allowance for direct diversion.

The addition of direct diversion as a method of diversion under these rights is needed to conform the water right Permits and License to the City's historical and current operations, and to provide operational flexibility and water supply reliability. Direct diversion of water has been and needs to continue to be an integral part of the operation of the Newell Creek and Felton Diversion facilities to meet annual demands.

*Underground Storage:*
The City proposes to redivert water to Underground Storage under Permits 16123 and 16691, and Licenses 1553 and 7200, via injection of surface water and subsequent recovery at the Beltz injection wells. The Beltz Wells are proposed to be added as Points of Rediversion under these rights. The underground storage of surface water will protect groundwater quality from seawater intrusion and allow the City to use such stored water during dry periods.

*Addition of Points of Diversion:*
The City proposes to add the Tait Street Diversion facility as an additional Point of Diversion to the Felton Permits 16123 and 16601 to allow for operational flexibility.

*Addition of Points of Diversion to Underground Storage:*
The City proposes to add Tait Street and Felton diversion facilities as Points of Diversion to Underground Storage.

*Addition of Points of Rediversion:*
The City proposes to add the Beltz Wells Nos. 8, 9, 10 and 12 as Points of Rediversion to Permits 16123 and 16691, and Licenses 1553 and 7200.

*Rate of Diversion:*
The combined rate of diversion to storage and direct diversion from the Felton and Tait Street Diversion Facilities under Permits 16123 and 16601 shall not exceed 20 cubic feet per second.

*Change in Place of Use:*
To provide flexibility to integrate water resources in the regional area, the City seeks to expand its currently allowed place of use under its Permits and Licenses to include adjacent services areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District, Soquel Creek Water District, the Santa Cruz Mid-County Groundwater Basin (Basin No. 3-027) and Santa Margarita Groundwater Basin (Basin No 3-027), as well as the City's North Coast service area.

*Change in Purpose of Use:*
The City proposes to consolidate its purposes of use under its Permits 16123 and 16601, and Licenses 1553, 7200 and 9847 to include municipal, domestic, industrial, recreation, fire protection, and protection of groundwater quality to prevent seawater intrusion.

*Addition of Fishery Terms:*
The City proposes to add, to each of its existing water right Licenses and Permits, the minimum bypass flows that the City has negotiated with the National Marine Fisheries Service and the California Department of Fish & Wildlife. Attached are the agreed upon minimum flow conditions in the San Lorenzo River during the allowed diversion seasons at both the Tait Street and Felton Diversion facilities, and in Newell Creek at Loch Lomond Reservoir.

*Extension of Time:*
The City is also seeking Extension of Time for Permits 16123 and 16601 to request an additional 37 years in which to put the water to full beneficial use. The Permits expired on December 31, 2006, and additional time is required to meet future growth demands set forth in the City of Santa Cruz, Santa Cruz County, City of Scotts Valley and City of Capitola's general plans. The Petitions do not represent an increase in the amount of water allowed to be diverted.

*Environmental Document:*
As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project.

# City of Santa Cruz
## Photographs to Accompany Petitions

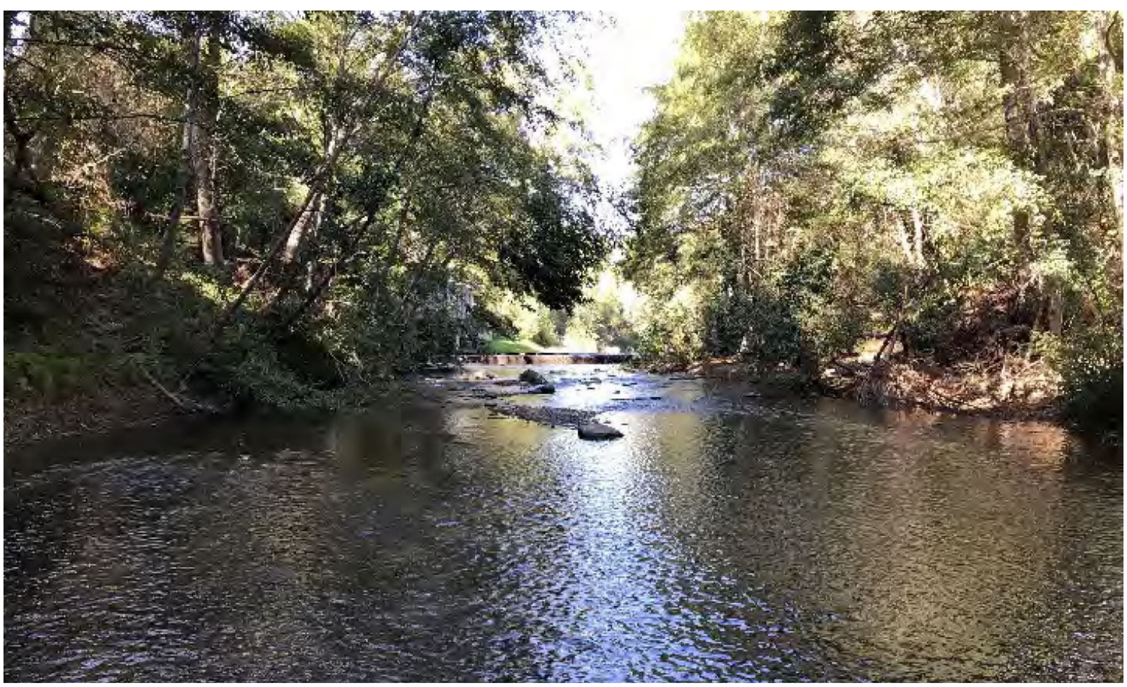
**Newell Creek & Loch Lomond Reservoir**
**License 9847 (Application A017913)**

**San Lorenzo River – Felton Diversion**
**Permit 16123 (Application A022318)**
**Permit 16601 (Application A023710)**

**San Lorenzo River – Tait Street Diversion**
**License 1553 (Application A004017)**
**License 7200 (Application A005215)**

FELTON DIVERSION FACILITY

MARCH 2009



FELTON DIVERSION FACILITY- LOOKING DOWNSTREAM

JANUARY 2019

FELTON DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

LOCH LOMOND LAKE- NEWELL DAM

JANUARY 2019

NEWELL CREEK- LOOKING DOWNSTREAM

FEBRUARY 2012

NEWELL CREEK- LOOKING UPSTREAM

AUGUST 2016

TAIT WELL 1B

JANUARY 2018

TAIT DIVERSION DAM

JANUARY 2019

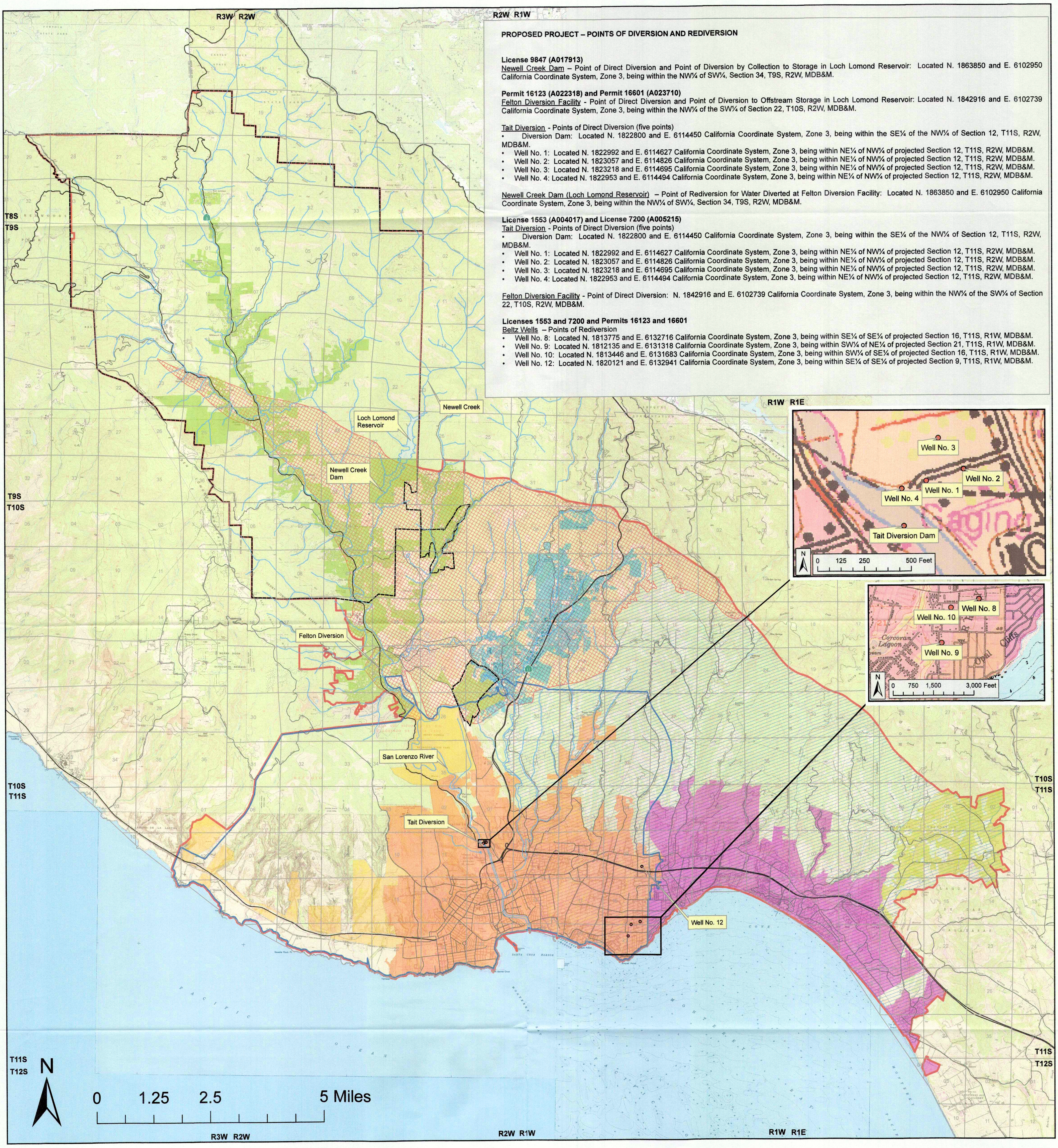
TAIT DIVERSION FACILITY – LOOKING DOWNSTREAM

JANUARY 2019

TAIT DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

# MAP TO ACCOMPANY PETITIONS FOR CHANGE
# LICENSES 1553, 7200, 9847 (A004017, A005215, AND A017913, RESPECTIVELY) AND PERMITS 16123 AND 16601 (A022318 AND A023710, RESPECTIVELY)
# CITY OF SANTA CRUZ
# SANTA CRUZ COUNTY, CA




San Lorenzo River and Tributaries

State Highways

**Water Service Areas**

- Central Water District
- San Lorenzo Valley Water District
- Scotts Valley Water District
- Soquel Creek Water District
- City of Santa Cruz' Service Area
- City of Santa Cruz' North Coast Service Area

**Places of Use**

- License # 9847
- License #'s 1553, 7200; Permit #'s 16601, 16123
- Proposed Place of Use Expanded

**Groundwater Basins**

- Santa Cruz Mid-County
- Santa Margarita

**CERTIFICATE OF ENGINEER**

I, NICHOLAS F. BONSIGNORE OF 2151 RIVER PLAZA DR., SUITE 100, SACRAMENTO, CALIFORNIA, DO HEREBY CERTIFY THAT THIS MAP WAS PREPARED UNDER MY DIRECT SUPERVISION BASED U.S.G.S. 7.5-MINUTE QUADRANGLES FOR BIG BASIN, CASTLE ROCK RIDGE, DAVENPORT, FELTON, LAUREL, SANTA CRUZ, SOQUEL, AND WATSONVILLE WEST, FROM PUBLISHED SERVICE AREA MAPS FOR CENTRAL WATER DISTRICT, SAN LORENZO VALLEY WATER DISTRICT, SCOTTS VALLEY WATER DISTRICT, SOQUEL CREEK WATER DISTRICT, MAPS ON FILE WITH SANTA CRUZ WATER DEPARTMENT AND SANTA CRUZ WATER DEPARTMENT LIMITED, AND OTHER INFORMATION PROVIDED BY CITY OF SANTA CRUZ, AND THAT IT CORRECTLY REPRESENTS THE PROJECT DESCRIBED IN THE ACCOMPANYING PETITIONS, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

7/23/2020

NICHOLAS F. BONSIGNORE
R.C.E NO. 39422
EXPIRES 12-31-2021

DATE

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation

Nicholas F. Bonsignore, P.E.
Robert C. Wagner, P.E.
Paula J. Whealen

Martin Berber, P.E.
Patrick W. Ervin, P.E.
David P. Lounsbury, P.E.
Vincent Maples, P.E.
Leah Orloff, Ph.D, P.E.
David H. Peterson, C.E.G., C.H.G.
Ryan E. Stolfus

January 6, 2021

Mr. Sam Boland-Brien
Supervising Engineer - Petition, Licensing & Registration
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

**Re: City of Santa Cruz**
**Petitions for Change and Extension of Time: Permits 16123 and 16601 (Applications A022318 and A023710 respectively)**
**Petitions for Change: Licenses 1553, 7200 and 9847 (Applications A004017, A005215 and A017913 respectively)**

Dear Mr. Boland-Brien:

In December 2006, the City of Santa Cruz filed Petitions for Extension of Time for Permits 16123 and 16601, and Petitions for Change for License 9847 and Permits 16123 and 16601 with the Division. The Division issued a Public Notice of these Petitions on October 8, 2008. Subsequently, the City determined that additional modifications were necessary and filed revised Petitions on these same rights on January 29, 2019 and again on August 5, 2020.

At this time, the City would like to amend its August 5, 2020 Petitions in their entirety and are submitting the enclosed amended Petitions for the referenced rights. The Petition revisions were made to respond to comments provided by you and your staff.

An Initial Study and Notice of Preparation of an Environmental Impact Report in support of the enclosed Petitions was issued by the City in 2018. The City is well into the preparation of a draft environmental impact report. Therefore, we request that these revised Petitions be issued for public notice as soon as possible to incorporate and/or address comments in the environmental document.

Enclosed are the executed Petitions, Underground Storage Supplements, Environmental Information forms, site photographs and accompanying map. In January 2019, Petition filing fees in the amount of $13,114.72 were submitted to the Division, with an $850 environmental fee for the California Department of Fish and Wildlife. Additional filing fees in the amount of $2,394.48

were submitted with the August 5, 2020 revised Petitions. We understand that no additional filing fees are due currently. I am also sending this letter and Petition package to you via email.

Please contact me if you have any questions regarding the enclosed Petitions.

Very truly yours,

WAGNER & BONSIGNORE
CONSULTING CIVIL ENGINEERS

Paula J. Whealen

Paula J. Whealen, Principal

Encl.

cc: (via email)
Rosemary Menard, City of Santa Cruz
Chris Berry, City of Santa Cruz
Ryan Bezerra, Bartkiewicz Kronick & Shanahan
Randi Adair, California Department of Fish & Wildlife
Amanda Morrison, NOAA National Marine Fisheries Service

Please indicate County where your project is located here:

Santa Cruz

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701
☒ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☒ **Place of Use** Wat. Code, § 1701
☒ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☐ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☒ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☒ **Other** Addition of Underground Storage

Application 4017 Permit License 1553 Statement

I (we) hereby petition for change(s) noted above and described as follows:

**Point of Diversion or Rediversion** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present: See Attached

Proposed: See Attached

**Place of Use** – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present: See Attached

Proposed: See Attached

**Purpose of Use**

Present: See Attached

Proposed: See Attached

**Split**

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

**Distribution of Storage**

Present:

Proposed:

**Temporary Urgency**
This temporary urgency change will be effective from [ ] to [ ].

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

**Instream Flow Dedication** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

Will the dedicated flow be diverted for consumptive use at a downstream location? ○ Yes ○ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

**Waste Water**
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ○ Yes ○ No

Will any legal user of the treated waste water discharged be affected? ○ Yes ○ No

**General Information** – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ○ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☒ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

Information in State Water Resources Control Board files.

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard
Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**
**(1) the form Environmental Information for Petitions, including required attachments, available at:**
**http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf**
**(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at:**
**http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/**
**(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)**

**City of Santa Cruz**

**Attachment to Petitions for Change**
**Permit 16123 (Application A022318)**
**Permit 16601 (Application A023710)**
**Felton Diversion Facility**

## Point of Diversion or Rediversion

*Present:* Felton Diversion Facility - Diversion to offstream storage from Felton Diversion Facility on San Lorenzo River located S 30 degrees E 3,200' from NW corner of Section 22, within the NE¼ of SW ¼ of Section 22, T10S, R2W, MDB&M for storage in Loch Lomond reservoir.

*Proposed:* Felton Diversion Facility [1] - Point of Direct Diversion, Point of Diversion to Underground Storage and Point of Diversion to Offstream Storage in Loch Lomond Reservoir: Located N.1842916 and E.6102739 California Coordinate System, Zone 3, being within the NW¼ of the SW¼ of Section 22, T10S, R2W, MDB&M.

Tait Diversion - Points of Direct Diversion and Diversion to Underground Storage:

- Diversion Dam: Located N.1822800 and E.6114450 California Coordinate System, Zone 3, being within the SE¼ of the NW¼ of Section 12, T11S, R2W, MDB&M.
- Well No. 1: Located N.1822992 and E.6114627 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 2: Located N.1823057 and E.6114826 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 3: Located N.1823218 and E.6114695 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 4: Located N.1822953 and E.6114494 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.

Beltz Injection Wells – Points of Rediversion to Underground Storage:

- Well No. 8: Located N.1813775 and E.6132716 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 9: Located N.1812135 and E.6131318 California Coordinate System, Zone 3, being within the SW¼ of NE¼ of projected Section 21, T11S, R1W, MDB&M.
- Well No. 10: Located N.1813446 and E.6131683 California Coordinate System, Zone 3, being within the SW¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 12: Located N.1820121 and E.6132941 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 9, T11S, R1W, MDB&M.

[1] There is no change in the physical Point of Diversion location. The description has been revised to provide a California Coordinate System, Zone 3 coordinate point.

**Method of Diversion**

*Present:* Diversion from San Lorenzo River to offstream storage in Loch Lomond Reservoir

*Proposed:* Diversion from San Lorenzo River to offstream storage in Loch Lomond Reservoir, direct diversion from San Lorenzo River, and diversion to underground storage. Rediversion to underground storage at Beltz Injection Wells.

**Underground Storage**

*Proposed:* The City proposes to add Underground Storage via injection of surface water and subsequent recovery at the Beltz Injection Wells.

**Place of Use**

*Present:* City of Santa Cruz Water Service Area within Townships 10S, 11S, Range 1W, 2W and 3W, MDB&M.

*Proposed:* At Loch Lomond Reservoir, and in the City of Santa Cruz Water Department's service area, including its North Coast service area; the service areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District and Soquel Creek Water District; the Santa Cruz Mid-County Groundwater Basin (DWR Bulletin 118 Basin No. 3-001) and Santa Margarita Groundwater Basin (DWR Bulletin 118 Basin No. 3-027); all as shown on a map filed with State Water Resources Control Board accompanying this Petition.

**Purpose of Use**

*Present:* Municipal

*Proposed:* Municipal, domestic, industrial, recreational, fire protection and protection of water quality

**Diversion Rate**

*Present:* Permit 16123 – Maximum rate of diversion to offstream storage shall not exceed 3,500 gpm.

Permit 16601 – Combined rate of diversion to offstream storage under Permits 16123 and 16601 shall not exceed 20 cfs.

*Proposed:* Permits 16601 and 16123 - The combined rate of direct diversion, diversion to offstream storage and diversion to underground storage under Permit 16123 at the Felton and Tait diversion facilities shall not exceed 3,500 gpm. The combined rate of direct diversion, diversion to offstream storage and diversion to underground storage under Permits 16123 and 16601 at the Felton and Tait diversion facilities shall not exceed 20 cubic feet per second.

## Terms and Conditions

*Present:* Permit 16601 - For the protection of fish, no diversion shall be made during the month of October which depletes the flow of the stream to less than 25 cubic feet per second nor to less than 20 cubic feet per second during the period November 1 to the succeeding May 31. No water shall be diverted until permittee has installed in the stream immediately below its point of diversion a staff gage, or other device satisfactory to the State Water Resources Control Board, showing the water levels which correspond to the above-mentioned flows in cubic feet per second. As a condition of continuing diversion, said measuring device shall be properly maintained.

Permit 16123 – Permittee shall bypass 10 cubic feet per second or the natural flow, whichever is less from September 1 through September 30; and 20 cubic feet per second or the natural flow, whichever is less from October 1 through May 31 for the preservation of fish and wildlife.

*Proposed:* Permits 16601 and 16123:

1) The City will bypass water at both the Felton and Tait Street Diversion Facilities according to the minimum streamflow schedule negotiated among the City, the National Marine Fisheries Service and the California Department of Fish & Wildlife as shown on the attached schedule. To improve fish passage at the Felton diversion facility, the City shall complete improvements to that facility consistent with any habitat conservation plan or incidental take permit issued by the National Marine Fisheries or California Department of Fish and Wildlife for the operation of that facility. Permittee shall complete those improvements in the time provided by that plan or permit.

2) No diversions under this right for rediversion to underground storage will occur during Hydrologic Condition 5, defined in the attached Exceedance Category Limits Table.

3) No delivery of water diverted under this right for use by a water supplier other than the City of Santa Cruz Water Department will occur during Hydrologic Conditions 4 and 5, as defined in the attached Exceedance Category Limits Table.

## Reason for Proposed Change

Modification of the City of Santa Cruz' rights are necessary to better utilize surface water within existing allocations, increase the flexibility of the City's water supply, and extend time to beneficially use water allowed under existing rights, in light of, among other things, significant water conservation measures.

| Month | Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2] | | | | |
|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (wettest)* |
| Oct | <=459 | 460-539 | 540-709 | 710-875 | >875 |
| Nov | <=1186 | 1187-1497 | 1498-1827 | 1828-2485 | >2485 |
| Dec | <=2397 | 2398-3134 | 3135-5642 | 5643-10196 | >10196 |
| Jan | <=4322 | 4323-8456 | 8457-16694 | 16695-28019 | >28019 |
| Feb | <=8442 | 8443-16368 | 16369-29140 | 29141-42995 | >42995 |
| Mar | <=13004 | 13005-22948 | 22949-35371 | 35372-57968 | >57968 |
| Apr | <=14203 | 14204-24491 | 24492-39487 | 39488-67884 | >67884 |
| May | <=15448 | 15449-25279 | 25280-41659 | 41660-71412 | >71412 |
| Jun | <=16005 | 16006-26116 | 26117-43123 | 43124-73420 | >73420 |
| Jul | <=16364 | 16365-26819 | 26820-44073 | 44074-74718 | >74718 |
| Aug | <=16653 | 16654-27355 | 27356-44799 | 44800-75591 | >75591 |
| Sep | <=16978 | 16979-27843 | 27844-45398 | 45399-76368 | >76368 |

cfs = cubic feet per second

Notes:

1. The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.
2. To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.
   a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.
   b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.
   c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

## Agreed Flows for Tait Diversion on the San Lorenzo River, as Measured at the City Gage immediately downstream of Tait Diversion[1]

| | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[3] (cfs) | Smolt Outmigration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5* *(driest)* | *Hydrologic Condition 4* *(dry)* | *Hydrologic Condition 3* *(normal)* | *Hydrologic Condition 2* *(wet)* | *Hydrologic Condition 1* *(very wet)* | | | | |
| Jan | 8.0 | 8.0 | 15.8 | 16.4 | 17.5 | 17.0/25.2 | | | 10.0 |
| Feb | 8.0 | 8.0 | 15.9 | 16.7 | 18.0 | 17.0/25.2 | | | 10.0 |
| Mar | 8.0 | 8.0 | 16.3 | 17.3 | 18.2 | 17.0/25.2 | | | 10.0[4] |
| Apr | 8.0 | 8.0 | 17.2 | 17.9 | 18.4 | 17.0/25.2[5] | | | 10.0[4] |
| May | 8.0 | 8.0 | 17.7 | 18.2 | 18.5 | | | | 10.0[4] |
| Jun | 8.0 | 8.0 | 16.6 | 18.1 | 18.5 | | | | |
| Jul | 8.0 | 8.0 | 12.4 | 15.8 | 18.2 | | | | |
| Aug | 8.0 | 8.0 | 9.8 | 11.9 | 16.4 | | | | |
| Sep | 8.0 | 8.0 | 9.0 | 11.1 | 13.3 | | | | |
| Oct | 8.0 | 8.0 | 9.8 | 11.4 | 13.3 | | | | |
| Nov | 8.0 | 8.0 | 12.5 | 14.1 | 16.4 | | | | |
| Dec | 8.0 | 8.0 | 15.1 | 16.2 | 17.6 | 17.0/25.2 | | | |

cfs = cubic feet per second

Notes:

1. The required flow is determined by the life stage requiring the highest flow in any given month.
2. For adult migration, a lower threshold of 17.0 cfs and an upper threshold of 25.2 cfs when flow would be at this level without City diversion during December through April. May be reduced to 3 consecutive days a week if storage levels in Loch Lomond fall below the following levels in million gallons (mg): Dec-1900 mg; Jan-2000 mg; Feb-2100 mg; Mar-2200 mg. Further, adult migration flows may be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond fall below the following levels: Dec-1600 mg; Jan-1700 mg; Feb-1800 mg; Mar-1900 mg.
3. No spawning or incubation occurs in this reach.
4. During Hydrologic Condition 5, provided at least 3 days per week.
5. April adult migration flows provided only in Hydrologic Conditions 1-3.

Agreed Flows for Felton Diversion on the San Lorenzo River, as Measured at the Big Trees Gage[1]

| | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) |
|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5* *(driest)* | *Hydrologic Condition 4* *(dry)* | *Hydrologic Condition 3* *(normal)* | *Hydrologic Condition 2* *(wet)* | *Hydrologic Condition 1* *(very wet)* | | |
| Jan | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Feb | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Mar | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Apr | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| May | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | 40.0 |
| Jun | No Diversion | | | | | | |
| Jul | | | | | | | |
| Aug | | | | | | | |
| Sep | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | | |
| Oct | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | | |
| Nov | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | |
| Dec | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |

cfs = cubic feet per second

Notes:

1. The required flow is determined by the life stage requiring the highest flow in any given month.
2. Provided when river mouth is open and natural flow would occur at this level without diversion.
3. Provided for 14 days following any potential migration event defined in Note 2.

Linda S. Adams
*Acting Secretary for Environmental Protection*

# State Water Resources Control Board

## Division of Water Rights

1001 I Street • Sacramento, California 95814• (916) 341-5300
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 341-5400 • http://www.waterboards.ca.gov/waterrights

Edmund G. Brown Jr.
*Governor*

License 1553 (A004017)
License 7200 (A005215)
Permit 16123 (A022318)
Permit 16601 (A023710)

**APPLICATION NO.** ______________
(Leave blank)

## UNDERGROUND STORAGE SUPPLEMENT TO APPLICATION TO APPROPRIATE WATER BY PERMIT

1. State amount of water to be diverted to underground storage from each point of diversion in item 3b of form APP.

See Attached.

a. Maximum Rate of diversions (1) __________ (2) __________ (3) __________ cfs
b. Maximum Annual Amount (1) __________ (2) __________ (3) __________ acre-feet

2. Describe any works used to divert to offstream spreading grounds or injection wells not identified in item 7 of form APP.

See Attached.

3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.

See Attached.

4. State depth of groundwater table in spreading grounds or immediate vicinity:
See Attached. feet below ground surface on __________ 19 __ measured at a point located within the _____ ¼ of _____ ¼ of Section _____, T _____, R _____, _____ B&M

5. Give any historic maximum and or minimum depths to the groundwater table in the area.

Location See Attached Maximum _________ feet below ground surface on _________ (date)
Location _________ Maximum _________ feet below ground surface on _________ (date)

6. Describe proposed spreading operation.

Injection via aquifer storage and recovery wells in the Beltz Injection Well System.

7. Describe location, capacity and features of proposed pretreatment facilities and/or injected wells.

See Attached.

8. Reference any available engineering reports, studies, or data on the aquifer involved.

Santa Cruz Mid-County Groundwater Sustainability Plan, November 2019.

9. Describe underground reservoir and attach a map or sketch of its location.

See Attached.

10. State estimated storage capacity of underground reservoir.

See Attached.

11. Describe existing use of the underground storage reservoir and any proposed change in its use.

Groundwater pumped from the Mid-County Groundwater Basin is used primarily for municipal purposes. The City believes that its proposed ASR injections would be the first active use of underground storage in the basin.

12. Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage.

See Attached.

**Attachment to Underground Storage Supplement**

**City of Santa Cruz**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change and Underground Storage Supplements for the City's above existing water right Licenses and Permits. Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations and make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights. As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project. Detailed discussion of the underground storage project facilities and operations can be found in the City's EIR for this project.

**Item 1. State amount of water to be diverted to underground storage from each point of diversion.**
Water will be diverted from the Points of Diversion at the stated rates of diversion in each of the Permits and Licenses named above, and as sought by the accompanying Petitions for Change on these rights. Water will be diverted at Tait Street and Felton Diversion facilities, and rediverted to underground storage via the Beltz Injection Well Nos. 8, 9, 10 and 12, which will be added as Points of Rediversion to the Permits and Licenses named above. The Beltz Injection Well System has a maximum injection capacity of 2.1 mgd (or about 6.5 acre-feet / day), which would be the maximum rate of rediversion to underground storage. If the City were to inject continuously at this rate for a full year, the maximum annual rediversion to underground storage would be approximately 2,372.5 acre-feet (6.5 acre-feet/day x 365 days). No diversions to support rediversion of water to underground storage will occur during Hydrologic Condition 5, as defined in the Exceedance Category Limits Table attached to the referenced Petitions.

**Item 2. Describe any works used to divert to offstream spreading grounds or injection wells.**
Water will be diverted from the existing diversion facilities named as Points of Diversion in the referenced Permits and Licenses. Those facilities include the Felton Diversion and Tait Street Diversion, both located on the San Lorenzo River.

**Item 3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.**

Not applicable. Underground storage will be made via injection wells associated with the City's existing Beltz Wells system. The Beltz Injection Wells are located within the Santa Cruz Mid-County Groundwater Basin as shown on the Map to Accompany the Change Petitions, and described as follows:

Points of Rediversion to Underground Storage

- Well No. 8: Located N. 1813775 and E. 6132716 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 9: Located N. 1812135 and E. 6131318 California Coordinate System, Zone 3, being within the SW¼ of NE¼ of projected Section 21, T11S, R1W, MDB&M.
- Well No. 10: Located N. 1813446 and E. 6131683 California Coordinate System, Zone 3, being within the SW¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 12: Located N. 1820121and E. 6132941 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 9, T11S, R1W, MDB&M.

**Item 4. State depth of groundwater table in spreading ground or immediate vicinity.**

**Item 5. Give any historic give any historic maximum and/or minimum depths to the groundwater table in the area.**

The Santa Cruz Mid-County Groundwater Sustainability Plan Figures 2-24 through 2-26, and 2-28 through 2-31 (attached) show depths to groundwater in 2005 and 2016, respectively.

**Item 6: Describe proposed spreading operation.**

Not applicable. Underground storage will be made via injection wells.

**Item 7: Describe location, capacity and features of proposed pretreatment facilities and/or injection wells.**

The City proposes to use existing and new infrastructure to redivert water under its referenced Permits and Licenses to Underground Storage through ASR operations. That water will be available for use by the City in dry periods, as well as for *in situ* protection of groundwater quality from seawater intrusion. The injected water will be treated to drinking water standards prior to injection and would be injected into the Beltz Well System within the Santa Cruz Mid-County Groundwater Basin, as shown on the Map to Accompany the Petitions and consistent with the State Water Resources Control Board's general order for ASR programs, Water Quality Order 2012-0010.

**Item 9: Describe underground reservoir and attach a map or sketch of its location.**

The City has joined with Soquel Creek Water District, Central Water District, the County of Santa Cruz, and private well representatives to form the Santa Cruz Mid-County Groundwater Agency, the local groundwater sustainability agency created pursuant to the requirements of California's

Sustainable Groundwater Management Act (SGMA). The Santa Cruz Mid-County Groundwater Agency has overseen the preparation of a cooperative groundwater sustainability plan (GSP) for the now redefined Santa Cruz Mid-County Groundwater Basin. Information on the location, capacity, and existing uses of the underground storage basin can be found in the GSP. The GSP's Figure 1-1 is attached and shows the surface boundaries of the Mid-County Groundwater Basin.

**Item 10: State estimated storage capacity of underground storage reservoir.**
The Santa Cruz Mid-County Groundwater Sustainability Plan estimates the potential yield of the Soquel-Aptos Area as 5,900 acre-feet annually (approximately 4,400 af from the Purisima Formation and 1,500 af from the Aromas Red Sands).

**Item 12: Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage.**
Water injected into the Beltz Injection Wells and recovered for later use will be measured using flow meters installed on each Injection Well. The meters can measure the injection and recovery amounts daily.

groundwater elevations below sea level. Hydrographs of Aromas and Purisima F-unit wells on Figure 2-17 show that groundwater elevations along the coast were very close to sea level thereby continuing to increase the threat of seawater intrusion in this area.

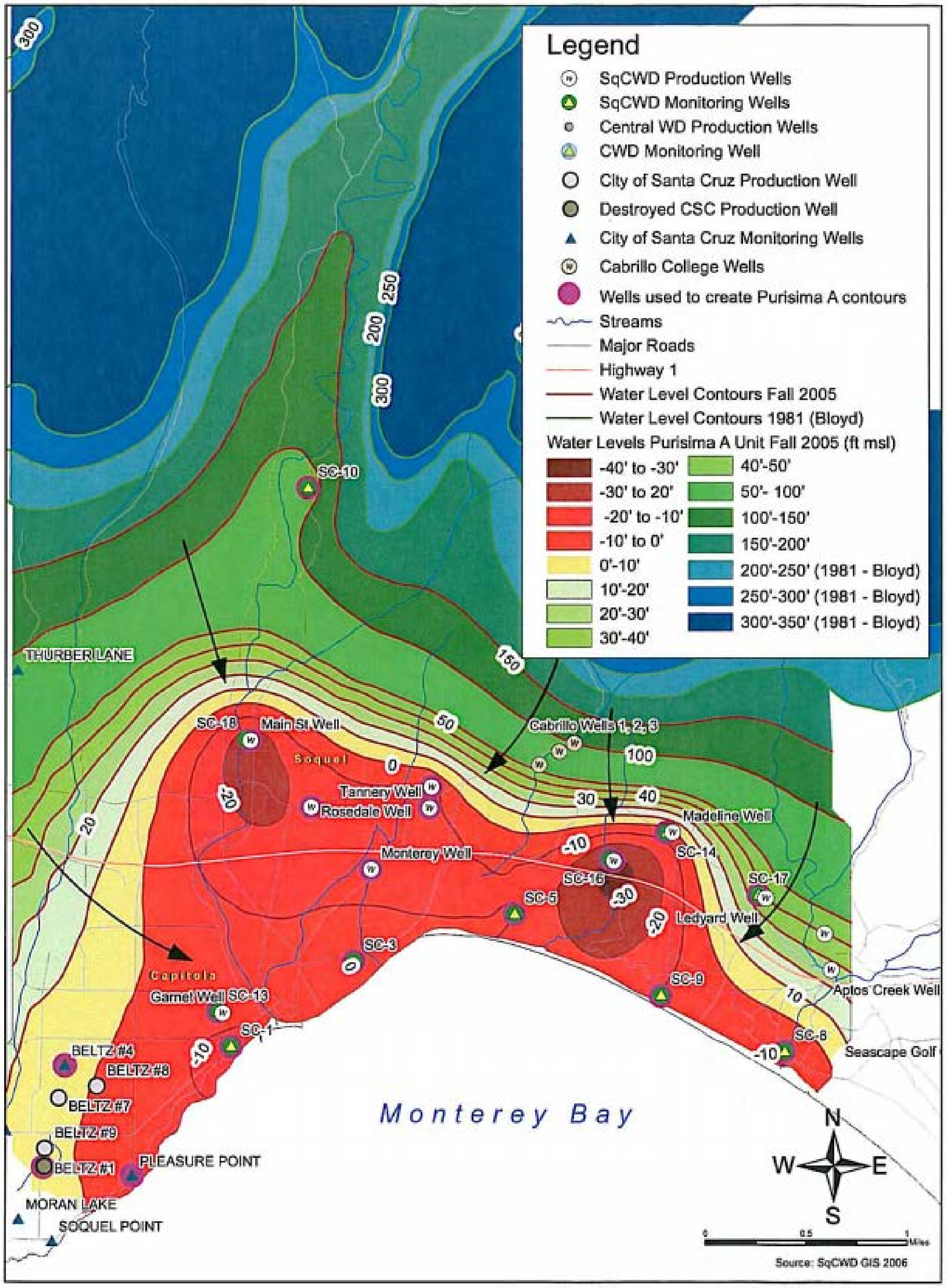



Figure 2-24. Groundwater Elevation Contours in Purisima A-Unit, Fall 2005

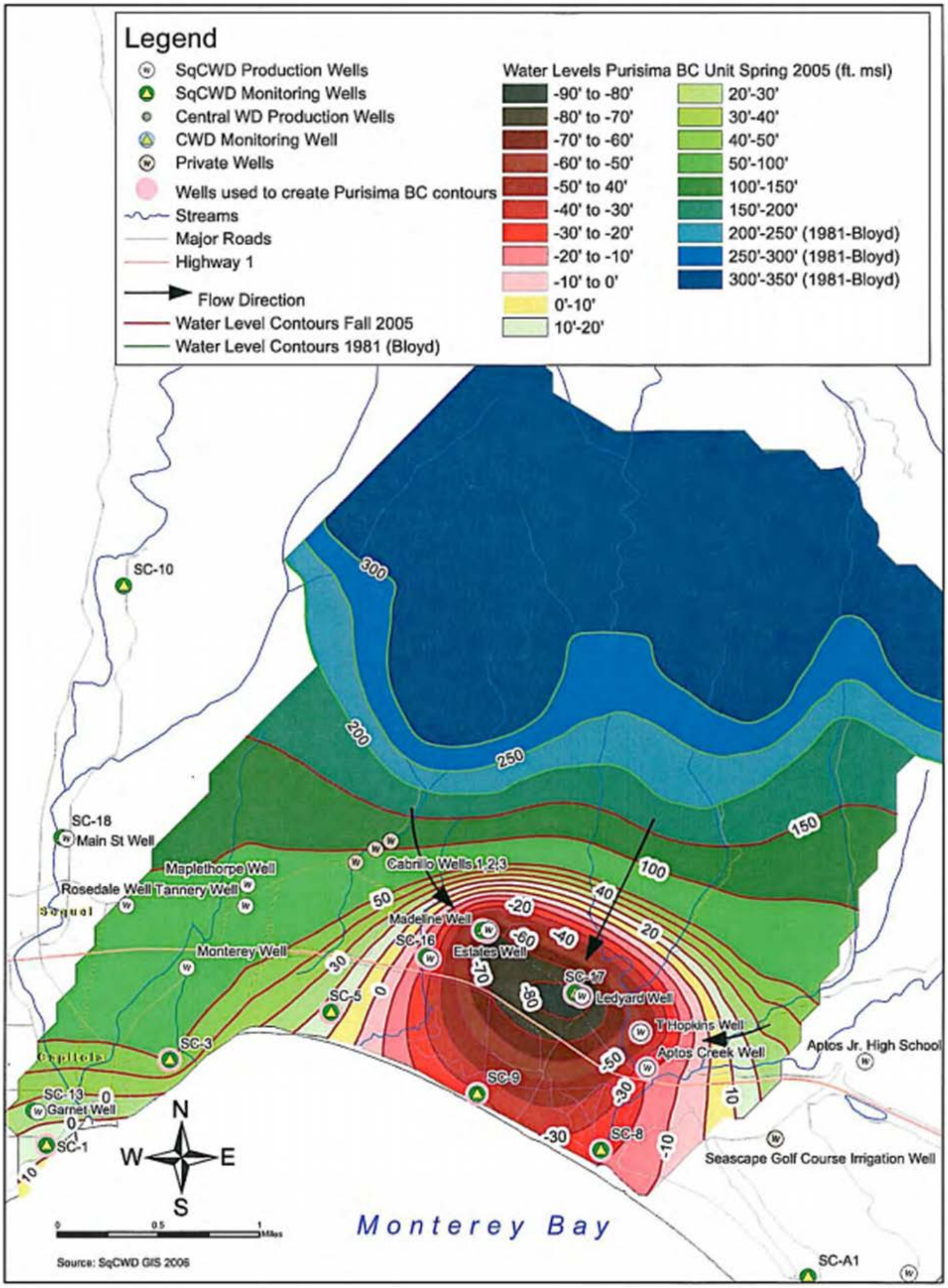



**Figure 2-25. Groundwater Elevation Contours in Purisima BC- Unit, Fall 2005**

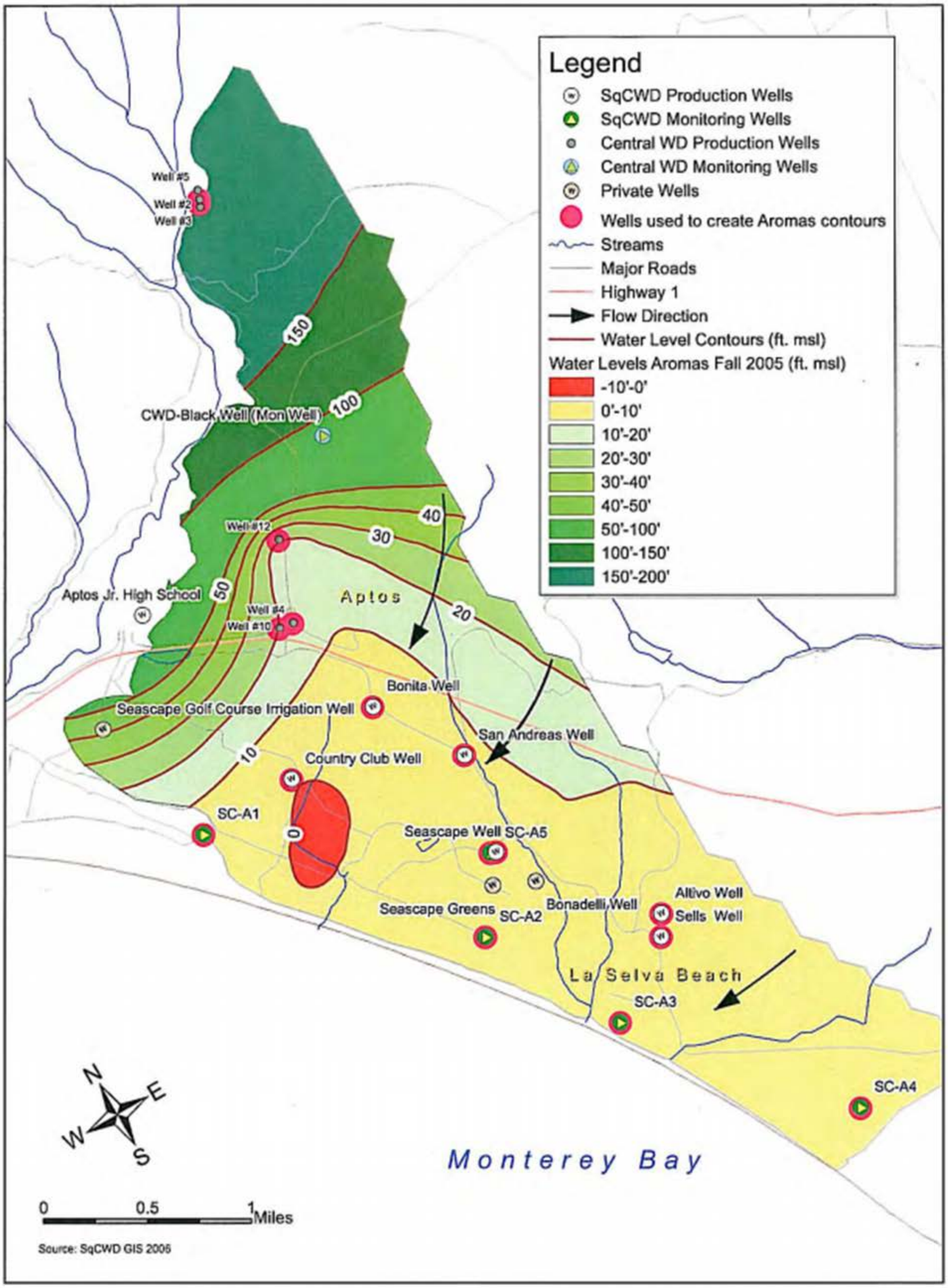



**Figure 2-26. Groundwater Elevation Contours in Aromas Red Sands and Pursima F-Unit, Fall 2005**

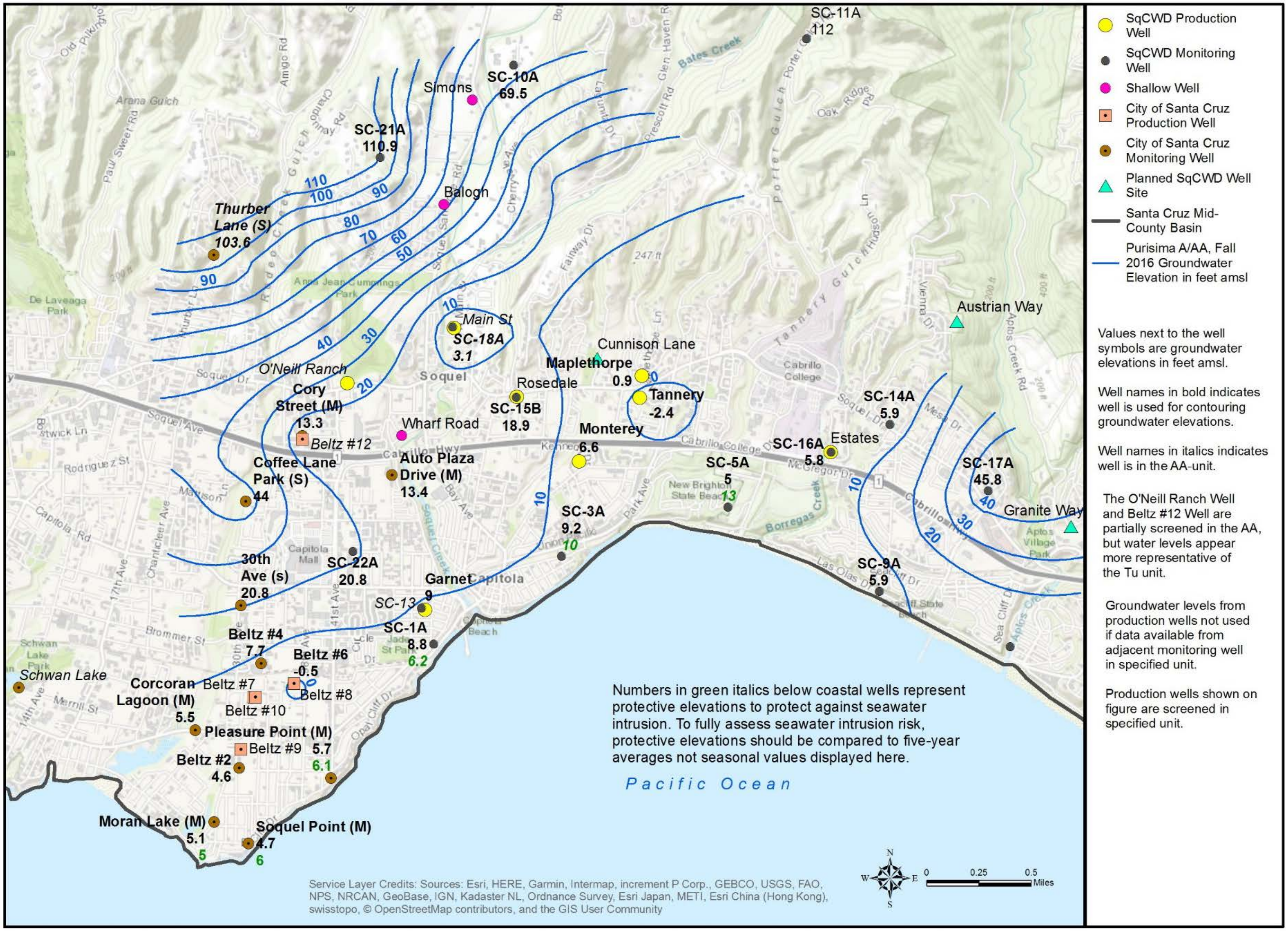



**Figure 2-28. Groundwater Elevation Contours in Purisima A and AA-Unit, Fall 2016**

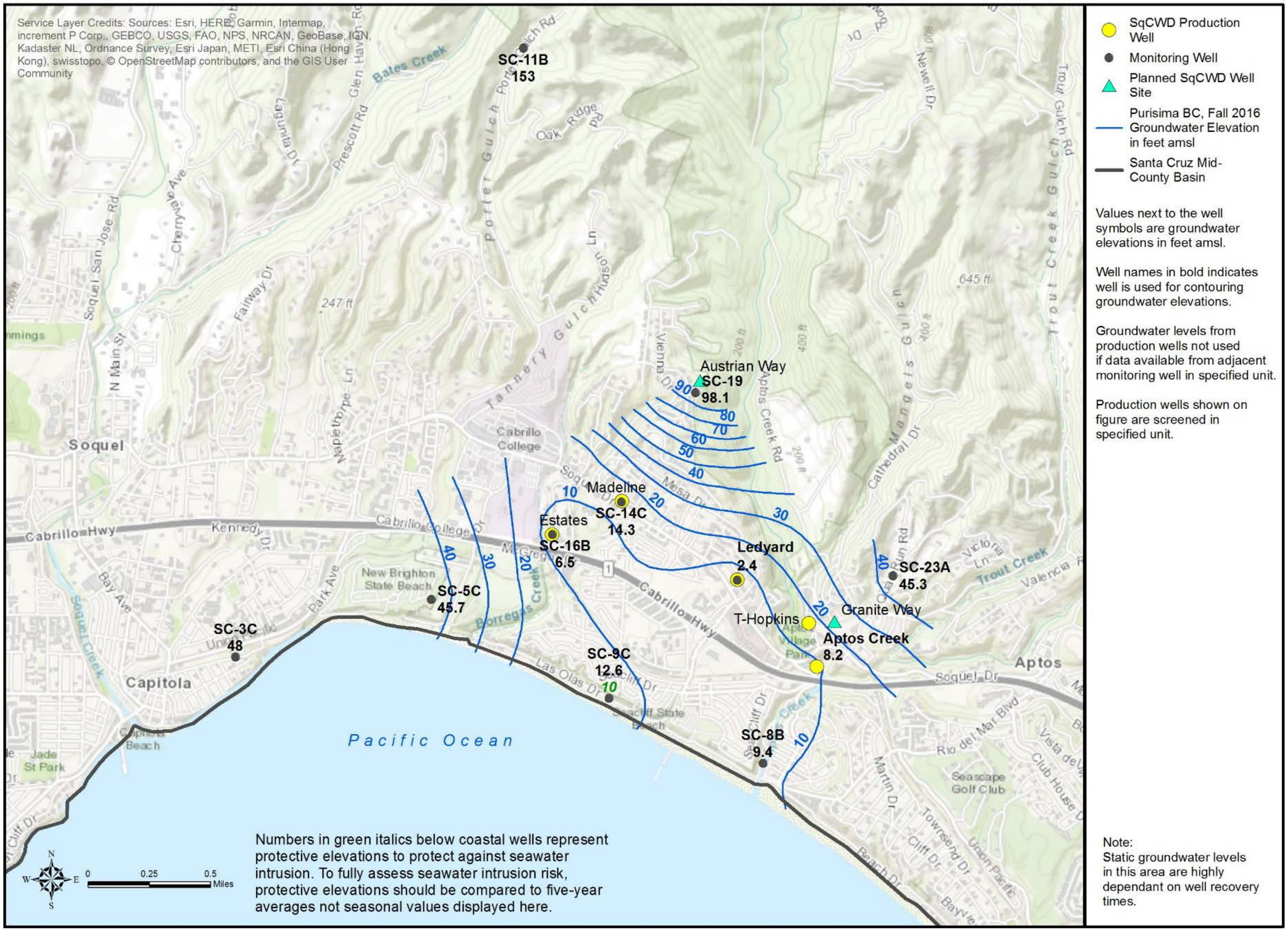



Figure 2-29. Groundwater Elevation Contours in Purisima BC-Unit, Fall 2016

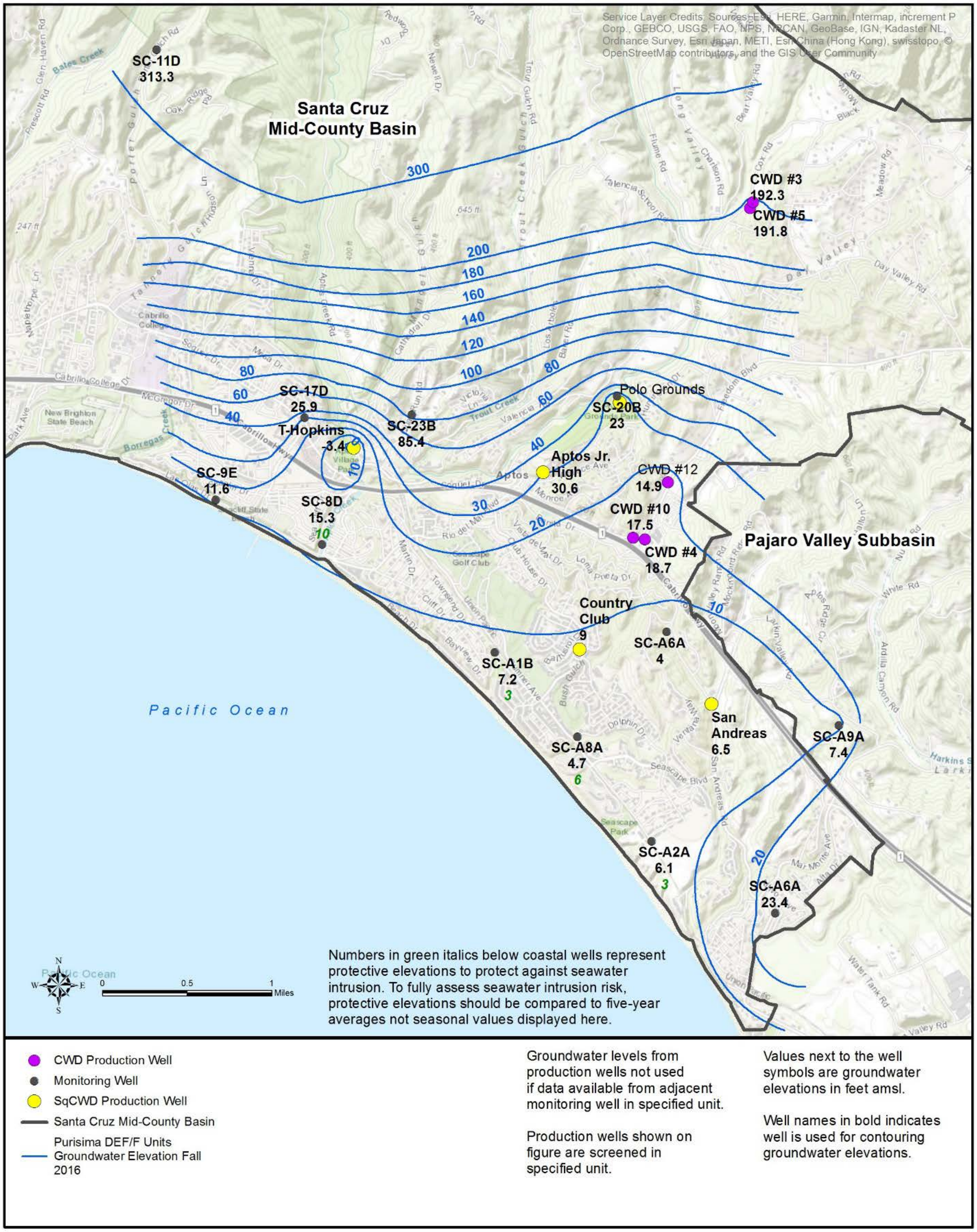



**Figure 2-30. Groundwater Elevation Contours in Purisima DEF/F-Unit, Fall 2016**

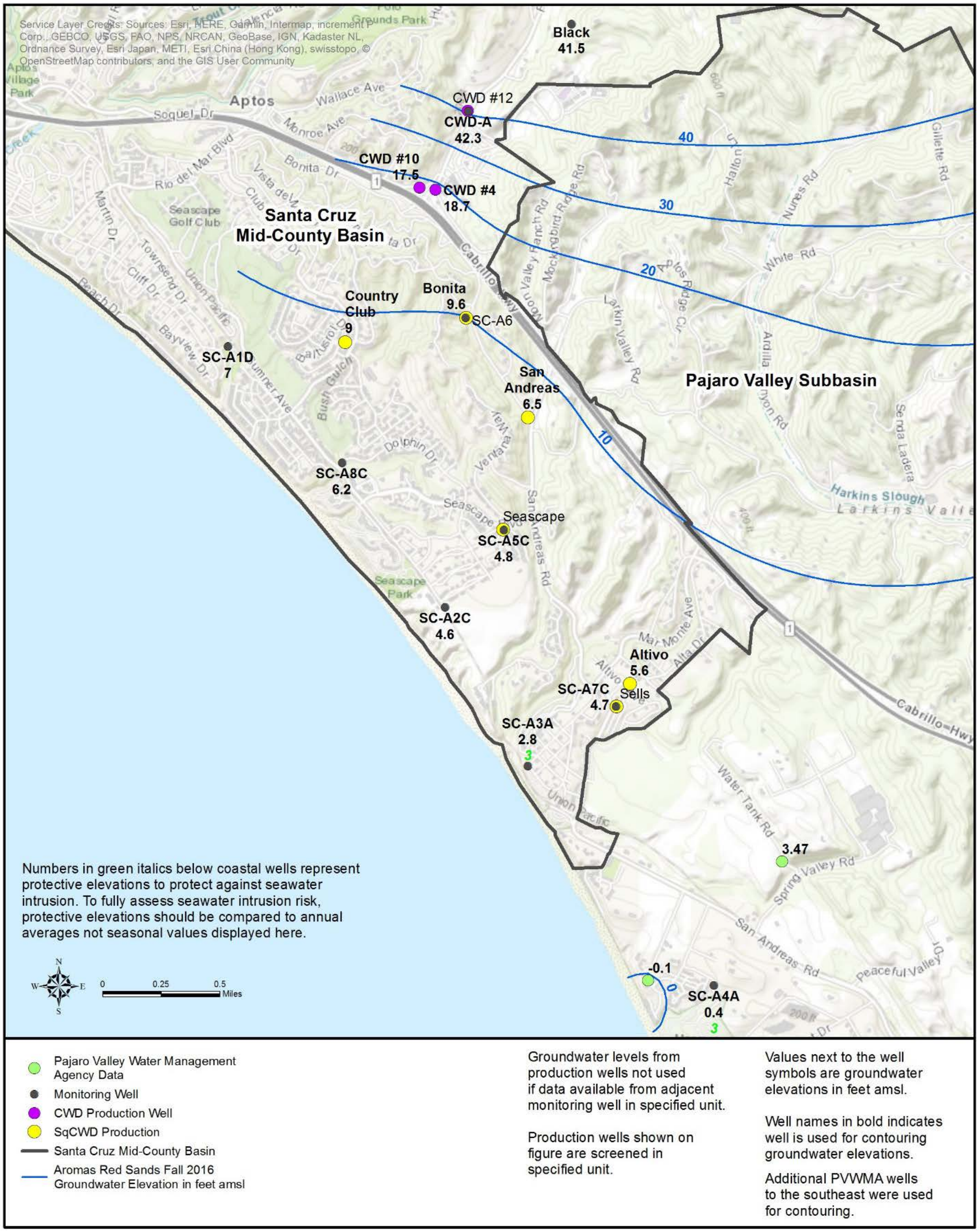



**Figure 2-31. Groundwater Elevation Contours in the Aromas Area, Fall 2016**

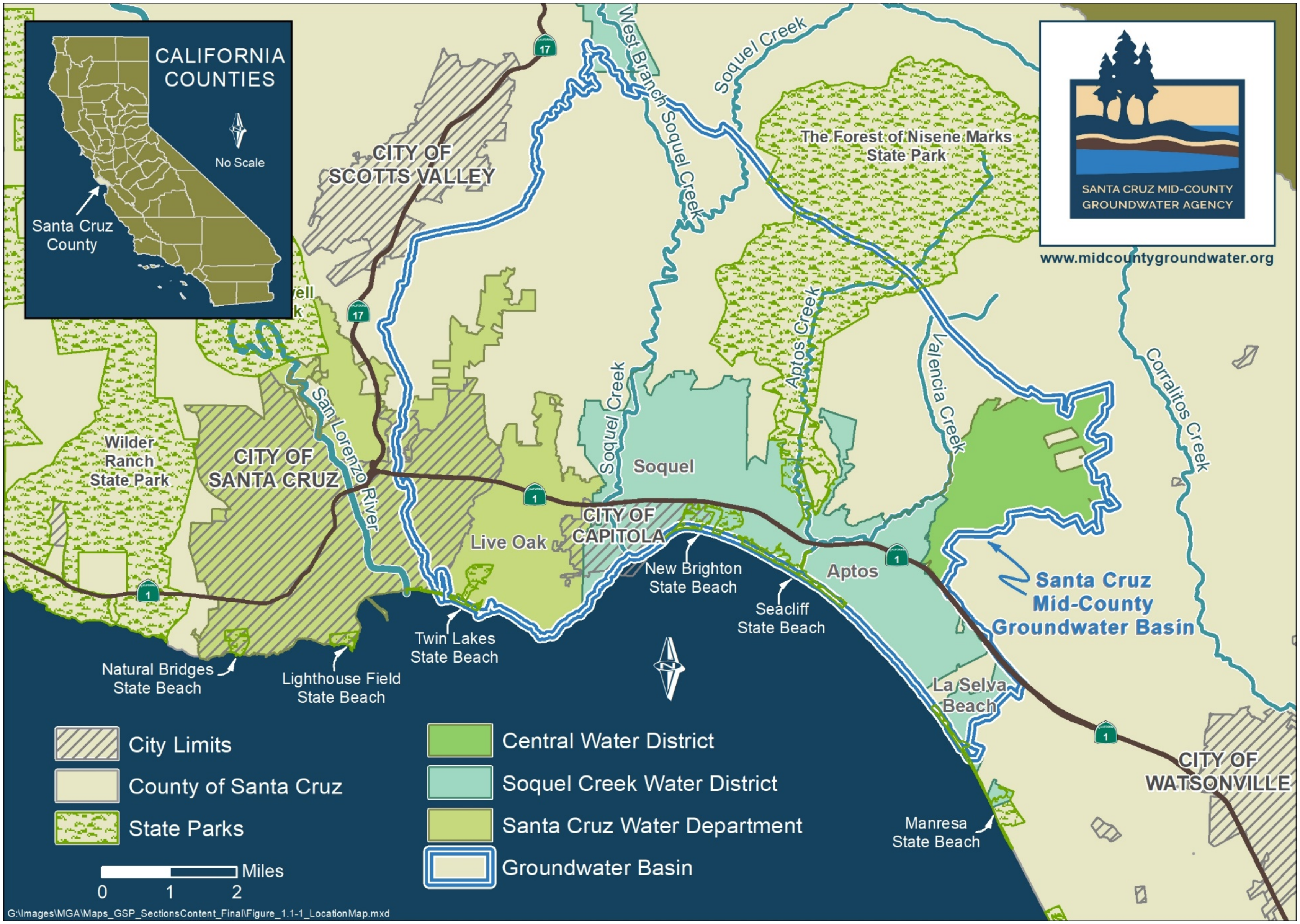



**Figure 1-1. Basin Location Map**

**Please indicate County where your project is located here:**

Santa Cruz

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# PETITION FOR EXTENSION OF TIME

Cal. Code Regs., tit. 23, § 842

Application 4017 Permit

Separate petitions are required for each water right. Incomplete forms may not be accepted. Complete this form if the time previously allowed in your permit within which to complete construction work and/or use of water has either expired or will expire and you require additional time. Provide attachments if necessary.

Water Code section 1396 requires an applicant to exercise due diligence in developing a water supply for beneficial use. The State Water Resources Control Board (State Water Board) will review the facts presented to determine whether: (a) due diligence has been exercised, (b) failure to comply with previous time requirements has been occasioned by obstacles which could not reasonably be avoided, and (c) that satisfactory progress will be made if an extension of time is granted. (Cal. Code Regs., tit. 23, § 844.) If an extension of time is not granted, the State Water Board may initiate formal action to either: (a) issue a license for the amount of water heretofore placed to beneficial use under the terms of the permit, or (b) revoke the permit.

If this is your first extension of time, answer the questions below for the permitted construction and water use development period. If previous extensions have been approved, answer these questions for the most recently approved extension period (for example, if a ten-year extension was previously granted, list the activities completed during the ten-year period).

I (we) request a 37 year extension of time to complete construction work and/or beneficial use of water.

**Construction**
Estimate the date construction work will begin, list the actions taken toward commencing or completing construction, and list the reasons why construction of the project was not completed.

Insert the attachment number here, if applicable: 1

**Complete Use of Water**
List reasons why use of water was not completed within time previously allowed.

Insert the attachment number here, if applicable: 2

**Quantities Diverted**

For direct diversion projects, list the cubic feet per second (cfs) or gallons per day (gpd) diverted during the maximum month of use, and the acre-feet per annum (afa) and identify the year this occurred. For storage projects, identify the maximum amount collected to storage and withdrawn for beneficial use in afa and identify the year this occurred.

| | Year | Maximum Diversion Rate (cfs or gpd) | Maximum Annual Amount (afa) |
|---|---|---|---|
| Direct Diversion | | | |
| Storage | 1989 | | About 1,622* |
| Beneficial Use | | | |

Insert the attachment number here, if applicable:

*THIS IS COMBINED USE FOR WATER DIVERTED UNDER A022318 & A023710.

**Information on Beneficial Uses**

| | |
|---|---|
| Number of Acres Irrigated | N/A |
| Number of Houses or People Served | 90,000+ |
| Per Capita Residential Water Use During the Maximum 30-day Period (gpd) | 53 GPCD |
| Extent of Past Use of Water for Any Other Purpose (identify gpd, cfs or afa) | |

Insert the attachment number here, if applicable:

**Approximate Amount Spent on Project** $ 78 million plus* *Annual Operating Budget in 2019

**Water Conservation –** If water conservation is required by your permit, provide the information below.

**Water Conservation Measures In Effect**

List the water conservation measures that are in effect within the place of use.

Insert the attachment number here, if applicable: 3

**Water Conservation Measures Planned**

List the water conservation measures that are feasible within the place of use and the date the measures will be implemented. Identify the quantities estimated to be conserved when the measures are implemented.

Insert the attachment number here, if applicable: 3

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that the above is true and correct to the best of my (our) knowledge and belief. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**
**(1) the form Environmental Information for Petitions, available at: http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf**
**(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/**
**(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)**

**Attachment to Petitions for Extension of Time**

**City of Santa Cruz**
**Permit 16123 (Application 22318) – San Lorenzo River, Felton Diversion Facility**
**Permit 16601 (Application 23710) – San Lorenzo River, Felton Diversion Facility**

*Attachment 1: Construction*

Additional time is required to maximize beneficial use under Permits 16123 and 16601 (Felton Permits). The City's extensive and successful water conservation program has enabled the City to serve any growth in its service area with the same level of diversions made under existing rights. To improve fish passage at the Felton diversion facility, permittee/licensee shall complete improvements to that facility consistent with National Marine Fisheries and California Department of Fish and Wildlife passage criteria that apply for coho salmon and steelhead.

*Attachment 2: Complete Use of Water*

The City is seeking approval of Petitions on its Felton Permits that add direct diversion as a method of diversion, add the Tait Street Diversion facility as an additional Point of Diversion, and adds the City's North Coast service areas and adjacent water district service areas for the allowed place of use. The City also proposes to divert water to Underground Storage under Permits 16123 and 16691 (and Licenses 1553 and 7200) via injection of surface water and subsequent recovery at its Beltz Injection Wells. The underground storage of surface water will protect groundwater quality from seawater intrusion and allow the City to use such stored water during drought years.

These modifications to the City's Felton Permits are necessary to maximum beneficial use. The City will bypass water at both the Felton and Tait Diversion Facilities according to the minimum streamflow schedule negotiated among the City, the National Marine Fisheries Service and California Department of Fish & Wildlife, as shown on the attached schedule.

*Attachment 3: Water Conservation Measures in Effect and Planned*

The City of Santa Cruz is actively implementing a variety of water conservation measures as described in its 2015 Urban Water Management Plan. Water activities include the following:

- Public and school information programs
- Landscape water survey
- Rain barrel distribution
- Lawn removal rebates
- Plumbing retrofits and rebates (laundry to landscape)
- Green business certifications
- Spray / rinse valve distribution
- Water budgets
- Turf removal rebates
- Graywater legalization and incentives
- Water restrictions and rationing

State of California
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

Permit 16123 (A022318)
Permit 16601 (A023710)

# ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

**DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED**

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

Insert the attachment number here, if applicable: 1

**Coordination with Regional Water Quality Control Board**

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: June 26, 2018

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ○ No

Will a waste discharge permit be required for the project? ○ Yes ○ No

If necessary, provide additional information below:

Improvements at the Felton Diversion Facility could require waste discharge requirements, or a waiver, from the Central Coast Regional Water Quality Control Board, as well as a 404 permit from the U.S. Army Corps of Engineers and/or a Streambed Alteration Agreement from the California Department of Fish & Wildlife. Those improvements, however, are not yet designed and finalized.

Insert the attachment number here, if applicable:

**Local Permits**

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact:

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted:

Date of Contact: October 3, 2018

Department: City of Santa Cruz - various depts

Phone Number:

County Zoning Designation: Not Applicable - municipal lands

Are any county permits required for your project? If yes, indicate type below. ○ Yes ○ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

## Federal and State Permits

Check any additional agencies that may require permits or other approvals for your project:

- [x] Regional Water Quality Control Board
- [x] Department of Fish and Game
- [ ] Dept of Water Resources, Division of Safety of Dams
- [ ] California Coastal Commission
- [ ] State Reclamation Board
- [x] U.S. Army Corps of Engineers
- [ ] U.S. Forest Service
- [ ] Bureau of Land Management
- [ ] Federal Energy Regulatory Commission
- [ ] Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

For each agency from which a permit is required, provide the following information:

| Agency | Permit Type | Person(s) Contacted | Contact Date | Phone Number |
|---|---|---|---|---|
| CDFW | LSAA 1600 | Randi Adair | | |
| RWQCB | WDRs / waiver | Potential at this time | | |
| USACE | 404 permit | Potential at this time | | |

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

## Construction or Grading Activity

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Archeology**

Has an archeological report been prepared for this project? If yes, provide a copy. ○ Yes ◉ No

Will another public agency be preparing an archeological report? ○ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Photographs**

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- ☒ Along the stream channel immediately downstream from each point of diversion
- ☒ Along the stream channel immediately upstream from each point of diversion
- ☒ At the place where water subject to this water right will be used

**Maps**

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

**All Water Right Holders Must Sign This Form:**
I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 7/28/2020 at Santa Cruz, CA .

Rosemary Menard
Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

**NOTE:**
- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

**Attachment to Environmental Information Form**
**City of Santa Cruz**

**License 9847 (Application A017913) – Newell Creek & Loch Lomond Reservoir**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change for all of the City's above referenced water right Licenses and Permits and Petitions for Extension of Time for the Felton Diversion Facility Permits 16123 and 16601. The Proposed Project also includes Petitions for Underground Storage for Licenses 1553 and 7200 and Permits 16123 and 16601.

Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations, make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights.

***Attachment No. 1***
## I. Description of Proposed Changes or Work Remaining to be Completed

*Addition of Direct Diversion as a Method of Diversion:*
The City is seeking approval of Petitions that would explicitly state direct diversion as a method of diversion from the San Lorenzo River (also known as the Felton Diversion Facility) under Permits 16123 and 16601 and from Newell Creek at the City's Newell Creek Dam, which impounds Loch Lomond Reservoir, under License 9847. Currently, these rights authorize diversion to storage in the Loch Lomond Reservoir, but do not explicitly state the right to take water by direct diversion; an oversight in the original filings. The City has calculated that the licensed amount of use under License 9847 would not have been possible without allowance for direct diversion.

The addition of direct diversion as a method of diversion under these rights is needed to conform the water right Permits and License to the City's historical and current operations, and to provide operational flexibility and water supply reliability. Direct diversion of water has been and needs to continue to be an integral part of the operation of the Newell Creek and Felton Diversion facilities to meet annual demands.

*Underground Storage:*
The City proposes to redivert water to Underground Storage under Permits 16123 and 16691, and Licenses 1553 and 7200, via injection of surface water and subsequent recovery at the Beltz injection wells. The Beltz Wells are proposed to be added as Points of Rediversion under these rights. The underground storage of surface water will protect groundwater quality from seawater intrusion and allow the City to use such stored water during dry periods.

*Addition of Points of Diversion:*
The City proposes to add the Tait Street Diversion facility as an additional Point of Diversion to the Felton Permits 16123 and 16601 to allow for operational flexibility.

*Addition of Points of Diversion to Underground Storage:*
The City proposes to add Tait Street and Felton diversion facilities as Points of Diversion to Underground Storage.

*Addition of Points of Rediversion:*
The City proposes to add the Beltz Wells Nos. 8, 9, 10 and 12 as Points of Rediversion to Permits 16123 and 16691, and Licenses 1553 and 7200.

*Rate of Diversion:*
The combined rate of diversion to storage and direct diversion from the Felton and Tait Street Diversion Facilities under Permits 16123 and 16601 shall not exceed 20 cubic feet per second.

*Change in Place of Use:*
To provide flexibility to integrate water resources in the regional area, the City seeks to expand its currently allowed place of use under its Permits and Licenses to include adjacent services areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District, Soquel Creek Water District, the Santa Cruz Mid-County Groundwater Basin (Basin No. 3-027) and Santa Margarita Groundwater Basin (Basin No 3-027), as well as the City's North Coast service area.

*Change in Purpose of Use:*
The City proposes to consolidate its purposes of use under its Permits 16123 and 16601, and Licenses 1553, 7200 and 9847 to include municipal, domestic, industrial, recreation, fire protection, and protection of groundwater quality to prevent seawater intrusion.

*Addition of Fishery Terms:*
The City proposes to add, to each of its existing water right Licenses and Permits, the minimum bypass flows that the City has negotiated with the National Marine Fisheries Service and the California Department of Fish & Wildlife. Attached are the agreed upon minimum flow conditions in the San Lorenzo River during the allowed diversion seasons at both the Tait Street and Felton Diversion facilities, and in Newell Creek at Loch Lomond Reservoir.

*Extension of Time:*
The City is also seeking Extension of Time for Permits 16123 and 16601 to request an additional 37 years in which to put the water to full beneficial use. The Permits expired on December 31, 2006, and additional time is required to meet future growth demands set forth in the City of Santa Cruz, Santa Cruz County, City of Scotts Valley and City of Capitola's general plans. The Petitions do not represent an increase in the amount of water allowed to be diverted.

*Environmental Document:*
As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project.

# City of Santa Cruz
# Photographs to Accompany Petitions

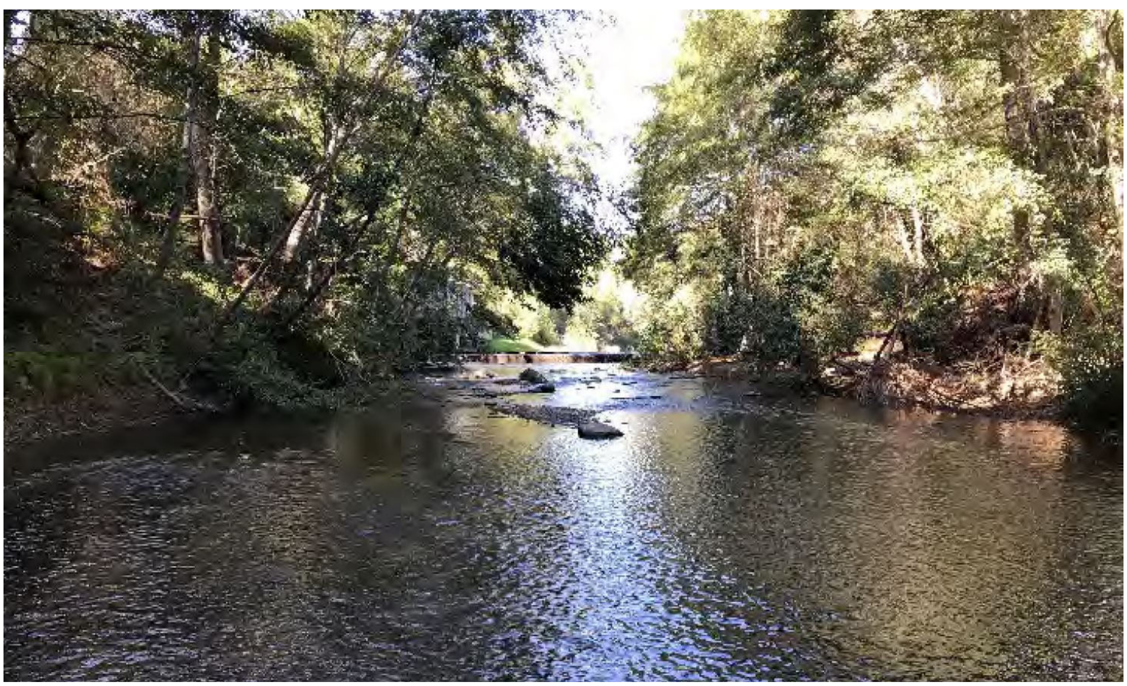
## Newell Creek & Loch Lomond Reservoir
## License 9847 (Application A017913)

## San Lorenzo River – Felton Diversion
## Permit 16123 (Application A022318)
## Permit 16601 (Application A023710)

## San Lorenzo River – Tait Street Diversion
## License 1553 (Application A004017)
## License 7200 (Application A005215)

FELTON DIVERSION FACILITY

MARCH 2009



FELTON DIVERSION FACILITY- LOOKING DOWNSTREAM

JANUARY 2019

FELTON DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

LOCH LOMOND LAKE- NEWELL DAM

JANUARY 2019

NEWELL CREEK- LOOKING DOWNSTREAM

FEBRUARY 2012

NEWELL CREEK- LOOKING UPSTREAM

AUGUST 2016

TAIT WELL 1B

JANUARY 2018

TAIT DIVERSION DAM

JANUARY 2019

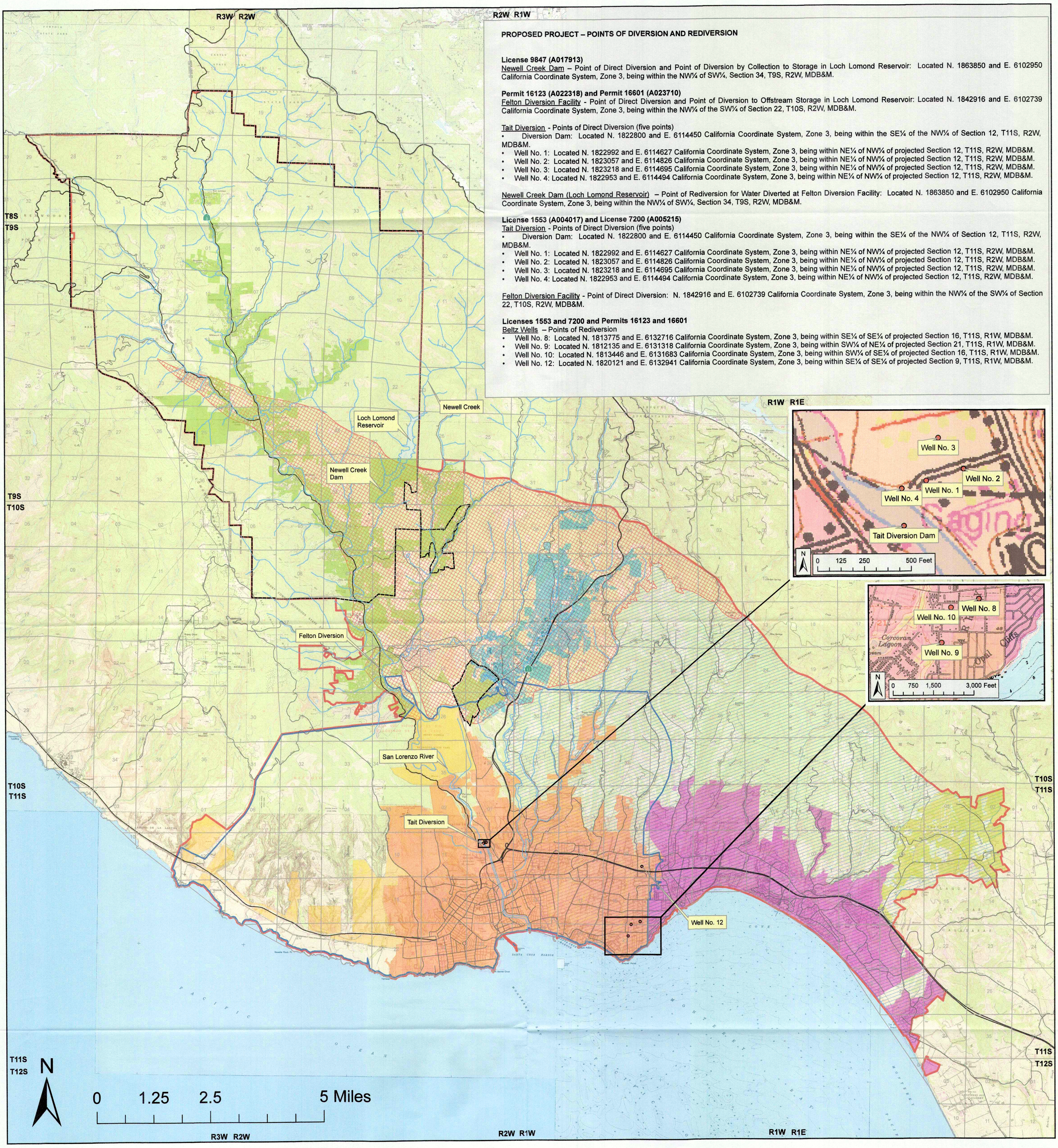
TAIT DIVERSION FACILITY – LOOKING DOWNSTREAM

JANUARY 2019

TAIT DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

# MAP TO ACCOMPANY PETITIONS FOR CHANGE
# LICENSES 1553, 7200, 9847 (A004017, A005215, AND A017913, RESPECTIVELY) AND PERMITS 16123 AND 16601 (A022318 AND A023710, RESPECTIVELY)
# CITY OF SANTA CRUZ
# SANTA CRUZ COUNTY, CA




San Lorenzo River and Tributaries

State Highways

**Water Service Areas**

- Central Water District
- San Lorenzo Valley Water District
- Scotts Valley Water District
- Soquel Creek Water District
- City of Santa Cruz' Service Area
- City of Santa Cruz' North Coast Service Area

**Places of Use**

- License # 9847
- License #'s 1553, 7200; Permit #'s 16601, 16123
- Proposed Place of Use Expanded

**Groundwater Basins**

- Santa Cruz Mid-County
- Santa Margarita

**CERTIFICATE OF ENGINEER**

I, NICHOLAS F. BONSIGNORE OF 2151 RIVER PLAZA DR., SUITE 100, SACRAMENTO, CALIFORNIA, DO HEREBY CERTIFY THAT THIS MAP WAS PREPARED UNDER MY DIRECT SUPERVISION BASED U.S.G.S. 7.5-MINUTE QUADRANGLES FOR BIG BASIN, CASTLE ROCK RIDGE, DAVENPORT, FELTON, LAUREL, SANTA CRUZ, SOQUEL, AND WATSONVILLE WEST, FROM PUBLISHED SERVICE AREA MAPS FOR CENTRAL WATER DISTRICT, SAN LORENZO VALLEY WATER DISTRICT, SCOTTS VALLEY WATER DISTRICT, SOQUEL CREEK WATER DISTRICT, MAPS ON FILE WITH SANTA CRUZ WATER DEPARTMENT AND SANTA CRUZ WATER DEPARTMENT LIMITED, AND OTHER INFORMATION PROVIDED BY CITY OF SANTA CRUZ, AND THAT IT CORRECTLY REPRESENTS THE PROJECT DESCRIBED IN THE ACCOMPANYING PETITIONS, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

7/23/2020

NICHOLAS F. BONSIGNORE
R.C.E NO. 39422
EXPIRES 12-31-2021

DATE

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation

Nicholas F. Bonsignore, P.E.
Robert C. Wagner, P.E.
Paula J. Whealen

Martin Berber, P.E.
Patrick W. Ervin, P.E.
David P. Lounsbury, P.E.
Vincent Maples, P.E.
Leah Orloff, Ph.D, P.E.
David H. Peterson, C.E.G., C.H.G.
Ryan E. Stolfus

January 6, 2021

Mr. Sam Boland-Brien
Supervising Engineer - Petition, Licensing & Registration
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

**Re: City of Santa Cruz**
**Petitions for Change and Extension of Time: Permits 16123 and 16601 (Applications A022318 and A023710 respectively)**
**Petitions for Change: Licenses 1553, 7200 and 9847 (Applications A004017, A005215 and A017913 respectively)**

Dear Mr. Boland-Brien:

In December 2006, the City of Santa Cruz filed Petitions for Extension of Time for Permits 16123 and 16601, and Petitions for Change for License 9847 and Permits 16123 and 16601 with the Division. The Division issued a Public Notice of these Petitions on October 8, 2008. Subsequently, the City determined that additional modifications were necessary and filed revised Petitions on these same rights on January 29, 2019 and again on August 5, 2020.

At this time, the City would like to amend its August 5, 2020 Petitions in their entirety and are submitting the enclosed amended Petitions for the referenced rights. The Petition revisions were made to respond to comments provided by you and your staff.

An Initial Study and Notice of Preparation of an Environmental Impact Report in support of the enclosed Petitions was issued by the City in 2018. The City is well into the preparation of a draft environmental impact report. Therefore, we request that these revised Petitions be issued for public notice as soon as possible to incorporate and/or address comments in the environmental document.

Enclosed are the executed Petitions, Underground Storage Supplements, Environmental Information forms, site photographs and accompanying map. In January 2019, Petition filing fees in the amount of $13,114.72 were submitted to the Division, with an $850 environmental fee for the California Department of Fish and Wildlife. Additional filing fees in the amount of $2,394.48

were submitted with the August 5, 2020 revised Petitions. We understand that no additional filing fees are due currently. I am also sending this letter and Petition package to you via email.

Please contact me if you have any questions regarding the enclosed Petitions.

Very truly yours,

WAGNER & BONSIGNORE
CONSULTING CIVIL ENGINEERS

Paula J. Whealen

Paula J. Whealen, Principal

Encl.

cc: (via email)
Rosemary Menard, City of Santa Cruz
Chris Berry, City of Santa Cruz
Ryan Bezerra, Bartkiewicz Kronick & Shanahan
Randi Adair, California Department of Fish & Wildlife
Amanda Morrison, NOAA National Marine Fisheries Service

**Please indicate County where your project is located here:**

Santa Cruz

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

☐ **Point of Diversion** Wat. Code, § 1701
☒ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
☒ **Place of Use** Wat. Code, § 1701
☒ **Purpose of Use** Wat. Code, § 1701

☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
☐ **Temporary Urgency** Wat. Code, § 1435
☐ **Instream Flow Dedication** Wat. Code, § 1707
☐ **Waste Water** Wat. Code, § 1211

☐ **Split** Cal. Code Regs., tit. 23, § 836
☒ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
☒ **Other** Addition of Underground Storage

Application 4017 Permit License 1553 Statement

I (we) hereby petition for change(s) noted above and described as follows:

**Point of Diversion or Rediversion** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present: See Attached

Proposed: See Attached

**Place of Use** – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present: See Attached

Proposed: See Attached

**Purpose of Use**

Present: See Attached

Proposed: See Attached

**Split**

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

**Distribution of Storage**

Present:

Proposed:

**Temporary Urgency**

This temporary urgency change will be effective from [ ] to [ ].

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

**Instream Flow Dedication** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

Will the dedicated flow be diverted for consumptive use at a downstream location? ○ Yes ○ No

If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

**Waste Water**

If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ○ Yes ○ No

Will any legal user of the treated waste water discharged be affected? ○ Yes ○ No

**General Information** – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ○ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:

☒ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

Information in State Water Resources Control Board files.

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**

**(1) the form Environmental Information for Petitions, including required attachments, available at:**
**http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf**

**(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at:**
**http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/**

**(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)**

**City of Santa Cruz**

**Attachment to Petitions for Change**
**Permit 16123 (Application A022318)**
**Permit 16601 (Application A023710)**
**Felton Diversion Facility**

## Point of Diversion or Rediversion

*Present:* Felton Diversion Facility - Diversion to offstream storage from Felton Diversion Facility on San Lorenzo River located S 30 degrees E 3,200' from NW corner of Section 22, within the NE¼ of SW ¼ of Section 22, T10S, R2W, MDB&M for storage in Loch Lomond reservoir.

*Proposed:* Felton Diversion Facility [1] - Point of Direct Diversion, Point of Diversion to Underground Storage and Point of Diversion to Offstream Storage in Loch Lomond Reservoir: Located N.1842916 and E.6102739 California Coordinate System, Zone 3, being within the NW¼ of the SW¼ of Section 22, T10S, R2W, MDB&M.

Tait Diversion - Points of Direct Diversion and Diversion to Underground Storage:

- Diversion Dam: Located N.1822800 and E.6114450 California Coordinate System, Zone 3, being within the SE¼ of the NW¼ of Section 12, T11S, R2W, MDB&M.
- Well No. 1: Located N.1822992 and E.6114627 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 2: Located N.1823057 and E.6114826 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 3: Located N.1823218 and E.6114695 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.
- Well No. 4: Located N.1822953 and E.6114494 California Coordinate System, Zone 3, being within NE¼ of NW¼ of projected Section 12, T11S, R2W, MDB&M.

Beltz Injection Wells – Points of Rediversion to Underground Storage:

- Well No. 8: Located N.1813775 and E.6132716 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 9: Located N.1812135 and E.6131318 California Coordinate System, Zone 3, being within the SW¼ of NE¼ of projected Section 21, T11S, R1W, MDB&M.
- Well No. 10: Located N.1813446 and E.6131683 California Coordinate System, Zone 3, being within the SW¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 12: Located N.1820121 and E.6132941 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 9, T11S, R1W, MDB&M.

[1] There is no change in the physical Point of Diversion location. The description has been revised to provide a California Coordinate System, Zone 3 coordinate point.

**Method of Diversion**

*Present:* Diversion from San Lorenzo River to offstream storage in Loch Lomond Reservoir

*Proposed:* Diversion from San Lorenzo River to offstream storage in Loch Lomond Reservoir, direct diversion from San Lorenzo River, and diversion to underground storage. Rediversion to underground storage at Beltz Injection Wells.

**Underground Storage**

*Proposed:* The City proposes to add Underground Storage via injection of surface water and subsequent recovery at the Beltz Injection Wells.

**Place of Use**

*Present:* City of Santa Cruz Water Service Area within Townships 10S, 11S, Range 1W, 2W and 3W, MDB&M.

*Proposed:* At Loch Lomond Reservoir, and in the City of Santa Cruz Water Department's service area, including its North Coast service area; the service areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District and Soquel Creek Water District; the Santa Cruz Mid-County Groundwater Basin (DWR Bulletin 118 Basin No. 3-001) and Santa Margarita Groundwater Basin (DWR Bulletin 118 Basin No. 3-027); all as shown on a map filed with State Water Resources Control Board accompanying this Petition.

**Purpose of Use**

*Present:* Municipal

*Proposed:* Municipal, domestic, industrial, recreational, fire protection and protection of water quality

**Diversion Rate**

*Present:* Permit 16123 – Maximum rate of diversion to offstream storage shall not exceed 3,500 gpm.

Permit 16601 – Combined rate of diversion to offstream storage under Permits 16123 and 16601 shall not exceed 20 cfs.

*Proposed:* Permits 16601 and 16123 - The combined rate of direct diversion, diversion to offstream storage and diversion to underground storage under Permit 16123 at the Felton and Tait diversion facilities shall not exceed 3,500 gpm. The combined rate of direct diversion, diversion to offstream storage and diversion to underground storage under Permits 16123 and 16601 at the Felton and Tait diversion facilities shall not exceed 20 cubic feet per second.

**Terms and Conditions**

*Present:* Permit 16601 - For the protection of fish, no diversion shall be made during the month of October which depletes the flow of the stream to less than 25 cubic feet per second nor to less than 20 cubic feet per second during the period November 1 to the succeeding May 31. No water shall be diverted until permittee has installed in the stream immediately below its point of diversion a staff gage, or other device satisfactory to the State Water Resources Control Board, showing the water levels which correspond to the above-mentioned flows in cubic feet per second. As a condition of continuing diversion, said measuring device shall be properly maintained.

Permit 16123 – Permittee shall bypass 10 cubic feet per second or the natural flow, whichever is less from September 1 through September 30; and 20 cubic feet per second or the natural flow, whichever is less from October 1 through May 31 for the preservation of fish and wildlife.

*Proposed:* Permits 16601 and 16123:

1) The City will bypass water at both the Felton and Tait Street Diversion Facilities according to the minimum streamflow schedule negotiated among the City, the National Marine Fisheries Service and the California Department of Fish & Wildlife as shown on the attached schedule. To improve fish passage at the Felton diversion facility, the City shall complete improvements to that facility consistent with any habitat conservation plan or incidental take permit issued by the National Marine Fisheries or California Department of Fish and Wildlife for the operation of that facility. Permittee shall complete those improvements in the time provided by that plan or permit.

2) No diversions under this right for rediversion to underground storage will occur during Hydrologic Condition 5, defined in the attached Exceedance Category Limits Table.

3) No delivery of water diverted under this right for use by a water supplier other than the City of Santa Cruz Water Department will occur during Hydrologic Conditions 4 and 5, as defined in the attached Exceedance Category Limits Table.

**Reason for Proposed Change**

Modification of the City of Santa Cruz' rights are necessary to better utilize surface water within existing allocations, increase the flexibility of the City's water supply, and extend time to beneficially use water allowed under existing rights, in light of, among other things, significant water conservation measures.

| Month | Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2] | | | | |
|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (wettest)* |
| Oct | <=459 | 460-539 | 540-709 | 710-875 | >875 |
| Nov | <=1186 | 1187-1497 | 1498-1827 | 1828-2485 | >2485 |
| Dec | <=2397 | 2398-3134 | 3135-5642 | 5643-10196 | >10196 |
| Jan | <=4322 | 4323-8456 | 8457-16694 | 16695-28019 | >28019 |
| Feb | <=8442 | 8443-16368 | 16369-29140 | 29141-42995 | >42995 |
| Mar | <=13004 | 13005-22948 | 22949-35371 | 35372-57968 | >57968 |
| Apr | <=14203 | 14204-24491 | 24492-39487 | 39488-67884 | >67884 |
| May | <=15448 | 15449-25279 | 25280-41659 | 41660-71412 | >71412 |
| Jun | <=16005 | 16006-26116 | 26117-43123 | 43124-73420 | >73420 |
| Jul | <=16364 | 16365-26819 | 26820-44073 | 44074-74718 | >74718 |
| Aug | <=16653 | 16654-27355 | 27356-44799 | 44800-75591 | >75591 |
| Sep | <=16978 | 16979-27843 | 27844-45398 | 45399-76368 | >76368 |

cfs = cubic feet per second

Notes:

1. The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.
2. To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.
   a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.
   b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.
   c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

## Agreed Flows for Tait Diversion on the San Lorenzo River, as Measured at the City Gage immediately downstream of Tait Diversion[1]

| | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[3] (cfs) | Smolt Outmigration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5* *(driest)* | *Hydrologic Condition 4* *(dry)* | *Hydrologic Condition 3* *(normal)* | *Hydrologic Condition 2* *(wet)* | *Hydrologic Condition 1* *(very wet)* | | | | |
| Jan | 8.0 | 8.0 | 15.8 | 16.4 | 17.5 | 17.0/25.2 | | | 10.0 |
| Feb | 8.0 | 8.0 | 15.9 | 16.7 | 18.0 | 17.0/25.2 | | | 10.0 |
| Mar | 8.0 | 8.0 | 16.3 | 17.3 | 18.2 | 17.0/25.2 | | | 10.0[4] |
| Apr | 8.0 | 8.0 | 17.2 | 17.9 | 18.4 | 17.0/25.2[5] | | | 10.0[4] |
| May | 8.0 | 8.0 | 17.7 | 18.2 | 18.5 | | | | 10.0[4] |
| Jun | 8.0 | 8.0 | 16.6 | 18.1 | 18.5 | | | | |
| Jul | 8.0 | 8.0 | 12.4 | 15.8 | 18.2 | | | | |
| Aug | 8.0 | 8.0 | 9.8 | 11.9 | 16.4 | | | | |
| Sep | 8.0 | 8.0 | 9.0 | 11.1 | 13.3 | | | | |
| Oct | 8.0 | 8.0 | 9.8 | 11.4 | 13.3 | | | | |
| Nov | 8.0 | 8.0 | 12.5 | 14.1 | 16.4 | | | | |
| Dec | 8.0 | 8.0 | 15.1 | 16.2 | 17.6 | 17.0/25.2 | | | |

cfs = cubic feet per second

Notes:

1. The required flow is determined by the life stage requiring the highest flow in any given month.
2. For adult migration, a lower threshold of 17.0 cfs and an upper threshold of 25.2 cfs when flow would be at this level without City diversion during December through April. May be reduced to 3 consecutive days a week if storage levels in Loch Lomond fall below the following levels in million gallons (mg): Dec-1900 mg; Jan-2000 mg; Feb-2100 mg; Mar-2200 mg. Further, adult migration flows may be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond fall below the following levels: Dec-1600 mg; Jan-1700 mg; Feb-1800 mg; Mar-1900 mg.
3. No spawning or incubation occurs in this reach.
4. During Hydrologic Condition 5, provided at least 3 days per week.
5. April adult migration flows provided only in Hydrologic Conditions 1-3.

## Agreed Flows for Felton Diversion on the San Lorenzo River, as Measured at the Big Trees Gage[1]

| | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) |
|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5* *(driest)* | *Hydrologic Condition 4* *(dry)* | *Hydrologic Condition 3* *(normal)* | *Hydrologic Condition 2* *(wet)* | *Hydrologic Condition 1* *(very wet)* | | |
| Jan | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Feb | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Mar | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Apr | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| May | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | 40.0 |
| Jun | No Diversion | | | | | | |
| Jul | | | | | | | |
| Aug | | | | | | | |
| Sep | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | | |
| Oct | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | | |
| Nov | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | | |
| Dec | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |

cfs = cubic feet per second

Notes:

1. The required flow is determined by the life stage requiring the highest flow in any given month.
2. Provided when river mouth is open and natural flow would occur at this level without diversion.
3. Provided for 14 days following any potential migration event defined in Note 2.

Linda S. Adams
*Acting Secretary for Environmental Protection*

# State Water Resources Control Board

## Division of Water Rights

1001 I Street • Sacramento, California 95814• (916) 341-5300
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 341-5400 • http://www.waterboards.ca.gov/waterrights

Edmund G. Brown Jr.
*Governor*

License 1553 (A004017)
License 7200 (A005215)
Permit 16123 (A022318)
Permit 16601 (A023710)

**APPLICATION NO.** ______________
(Leave blank)

## UNDERGROUND STORAGE SUPPLEMENT TO APPLICATION TO APPROPRIATE WATER BY PERMIT

1. State amount of water to be diverted to underground storage from each point of diversion in item 3b of form APP.

   See Attached.

   a. Maximum Rate of diversions (1) __________ (2) __________ (3) __________ cfs
   b. Maximum Annual Amount (1) __________ (2) __________ (3) __________ acre-feet

2. Describe any works used to divert to offstream spreading grounds or injection wells not identified in item 7 of form APP.

   See Attached.

3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.

   See Attached.

4. State depth of groundwater table in spreading grounds or immediate vicinity:
   See Attached. feet below ground surface on __________ 19 __ measured at a point located within the _____ ¼ of _____ ¼ of Section _____, T _____, R _____, _____ B&M

5. Give any historic maximum and or minimum depths to the groundwater table in the area.

   Location See Attached Maximum _________ feet below ground surface on _________ (date)
   Location _________ Maximum _________ feet below ground surface on _________ (date)

6. Describe proposed spreading operation.

   Injection via aquifer storage and recovery wells in the Beltz Injection Well System.

7. Describe location, capacity and features of proposed pretreatment facilities and/or injected wells.

See Attached.

8. Reference any available engineering reports, studies, or data on the aquifer involved.

Santa Cruz Mid-County Groundwater Sustainability Plan, November 2019.

9. Describe underground reservoir and attach a map or sketch of its location.

See Attached.

10. State estimated storage capacity of underground reservoir.

See Attached.

11. Describe existing use of the underground storage reservoir and any proposed change in its use.

Groundwater pumped from the Mid-County Groundwater Basin is used primarily for municipal purposes. The City believes that its proposed ASR injections would be the first active use of underground storage in the basin.

12. Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage.

See Attached.

**Attachment to Underground Storage Supplement**

**City of Santa Cruz**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change and Underground Storage Supplements for the City's above existing water right Licenses and Permits. Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations and make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights. As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project. Detailed discussion of the underground storage project facilities and operations can be found in the City's EIR for this project.

**Item 1. State amount of water to be diverted to underground storage from each point of diversion.**
Water will be diverted from the Points of Diversion at the stated rates of diversion in each of the Permits and Licenses named above, and as sought by the accompanying Petitions for Change on these rights. Water will be diverted at Tait Street and Felton Diversion facilities, and rediverted to underground storage via the Beltz Injection Well Nos. 8, 9, 10 and 12, which will be added as Points of Rediversion to the Permits and Licenses named above. The Beltz Injection Well System has a maximum injection capacity of 2.1 mgd (or about 6.5 acre-feet / day), which would be the maximum rate of rediversion to underground storage. If the City were to inject continuously at this rate for a full year, the maximum annual rediversion to underground storage would be approximately 2,372.5 acre-feet (6.5 acre-feet/day x 365 days). No diversions to support rediversion of water to underground storage will occur during Hydrologic Condition 5, as defined in the Exceedance Category Limits Table attached to the referenced Petitions.

**Item 2. Describe any works used to divert to offstream spreading grounds or injection wells.**
Water will be diverted from the existing diversion facilities named as Points of Diversion in the referenced Permits and Licenses. Those facilities include the Felton Diversion and Tait Street Diversion, both located on the San Lorenzo River.

**Item 3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.**
Not applicable. Underground storage will be made via injection wells associated with the City's existing Beltz Wells system. The Beltz Injection Wells are located within the Santa Cruz Mid-County Groundwater Basin as shown on the Map to Accompany the Change Petitions, and described as follows:

<u>Points of Rediversion to Underground Storage</u>

- Well No. 8: Located N. 1813775 and E. 6132716 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 9: Located N. 1812135 and E. 6131318 California Coordinate System, Zone 3, being within the SW¼ of NE¼ of projected Section 21, T11S, R1W, MDB&M.
- Well No. 10: Located N. 1813446 and E. 6131683 California Coordinate System, Zone 3, being within the SW¼ of SE¼ of projected Section 16, T11S, R1W, MDB&M.
- Well No. 12: Located N. 1820121and E. 6132941 California Coordinate System, Zone 3, being within the SE¼ of SE¼ of projected Section 9, T11S, R1W, MDB&M.

**Item 4. State depth of groundwater table in spreading ground or immediate vicinity.**
**Item 5. Give any historic give any historic maximum and/or minimum depths to the groundwater table in the area.**
The Santa Cruz Mid-County Groundwater Sustainability Plan Figures 2-24 through 2-26, and 2-28 through 2-31 (attached) show depths to groundwater in 2005 and 2016, respectively.

**Item 6: Describe proposed spreading operation.**
Not applicable. Underground storage will be made via injection wells.

**Item 7: Describe location, capacity and features of proposed pretreatment facilities and/or injection wells.**
The City proposes to use existing and new infrastructure to redivert water under its referenced Permits and Licenses to Underground Storage through ASR operations. That water will be available for use by the City in dry periods, as well as for *in situ* protection of groundwater quality from seawater intrusion. The injected water will be treated to drinking water standards prior to injection and would be injected into the Beltz Well System within the Santa Cruz Mid-County Groundwater Basin, as shown on the Map to Accompany the Petitions and consistent with the State Water Resources Control Board's general order for ASR programs, Water Quality Order 2012-0010.

**Item 9: Describe underground reservoir and attach a map or sketch of its location.**
The City has joined with Soquel Creek Water District, Central Water District, the County of Santa Cruz, and private well representatives to form the Santa Cruz Mid-County Groundwater Agency, the local groundwater sustainability agency created pursuant to the requirements of California's

Sustainable Groundwater Management Act (SGMA). The Santa Cruz Mid-County Groundwater Agency has overseen the preparation of a cooperative groundwater sustainability plan (GSP) for the now redefined Santa Cruz Mid-County Groundwater Basin. Information on the location, capacity, and existing uses of the underground storage basin can be found in the GSP. The GSP's Figure 1-1 is attached and shows the surface boundaries of the Mid-County Groundwater Basin.

**Item 10: State estimated storage capacity of underground storage reservoir.**
The Santa Cruz Mid-County Groundwater Sustainability Plan estimates the potential yield of the Soquel-Aptos Area as 5,900 acre-feet annually (approximately 4,400 af from the Purisima Formation and 1,500 af from the Aromas Red Sands).

**Item 12: Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage.**
Water injected into the Beltz Injection Wells and recovered for later use will be measured using flow meters installed on each Injection Well. The meters can measure the injection and recovery amounts daily.

groundwater elevations below sea level. Hydrographs of Aromas and Purisima F-unit wells on Figure 2-17 show that groundwater elevations along the coast were very close to sea level thereby continuing to increase the threat of seawater intrusion in this area.

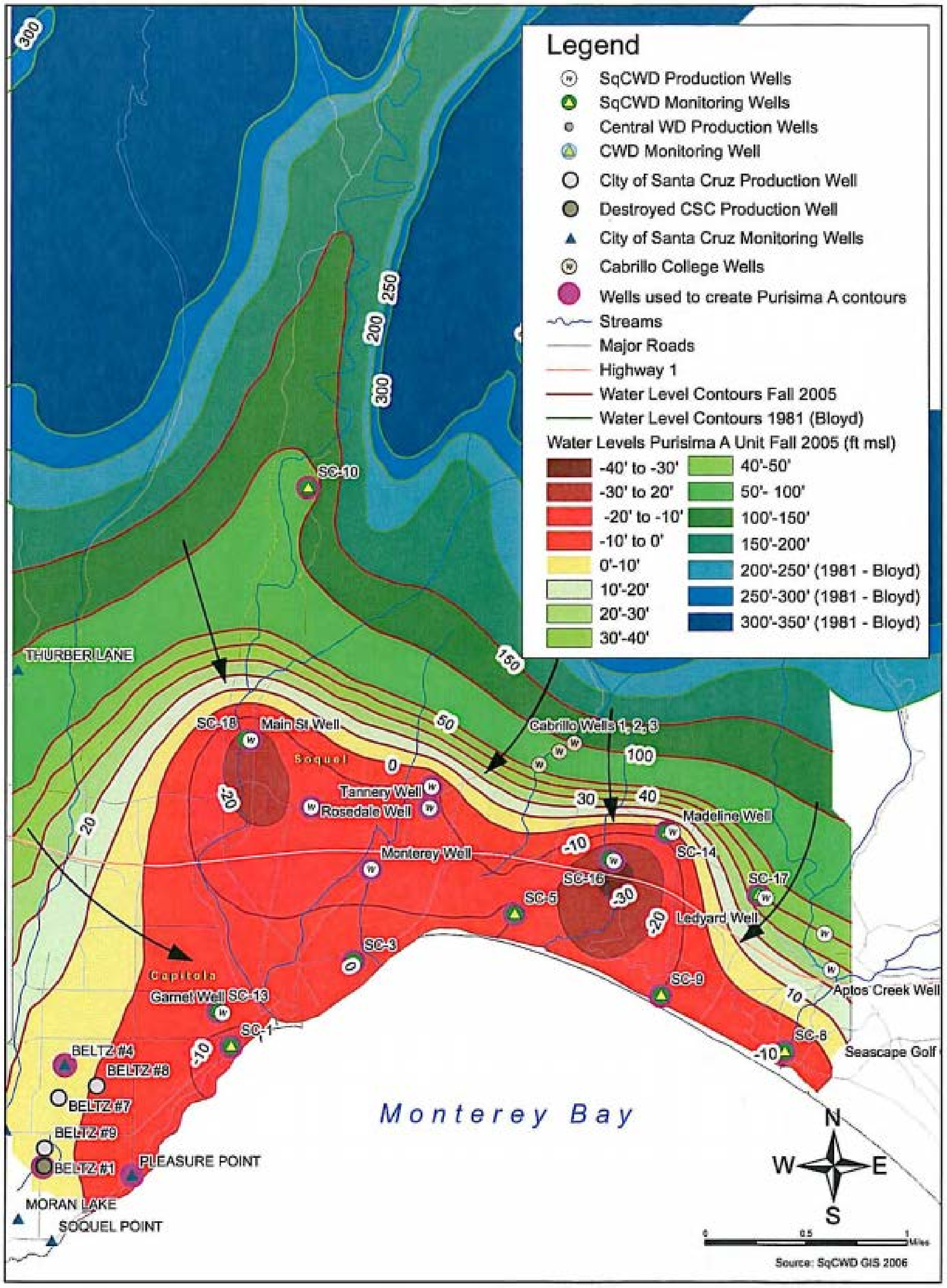



Figure 2-24. Groundwater Elevation Contours in Purisima A-Unit, Fall 2005

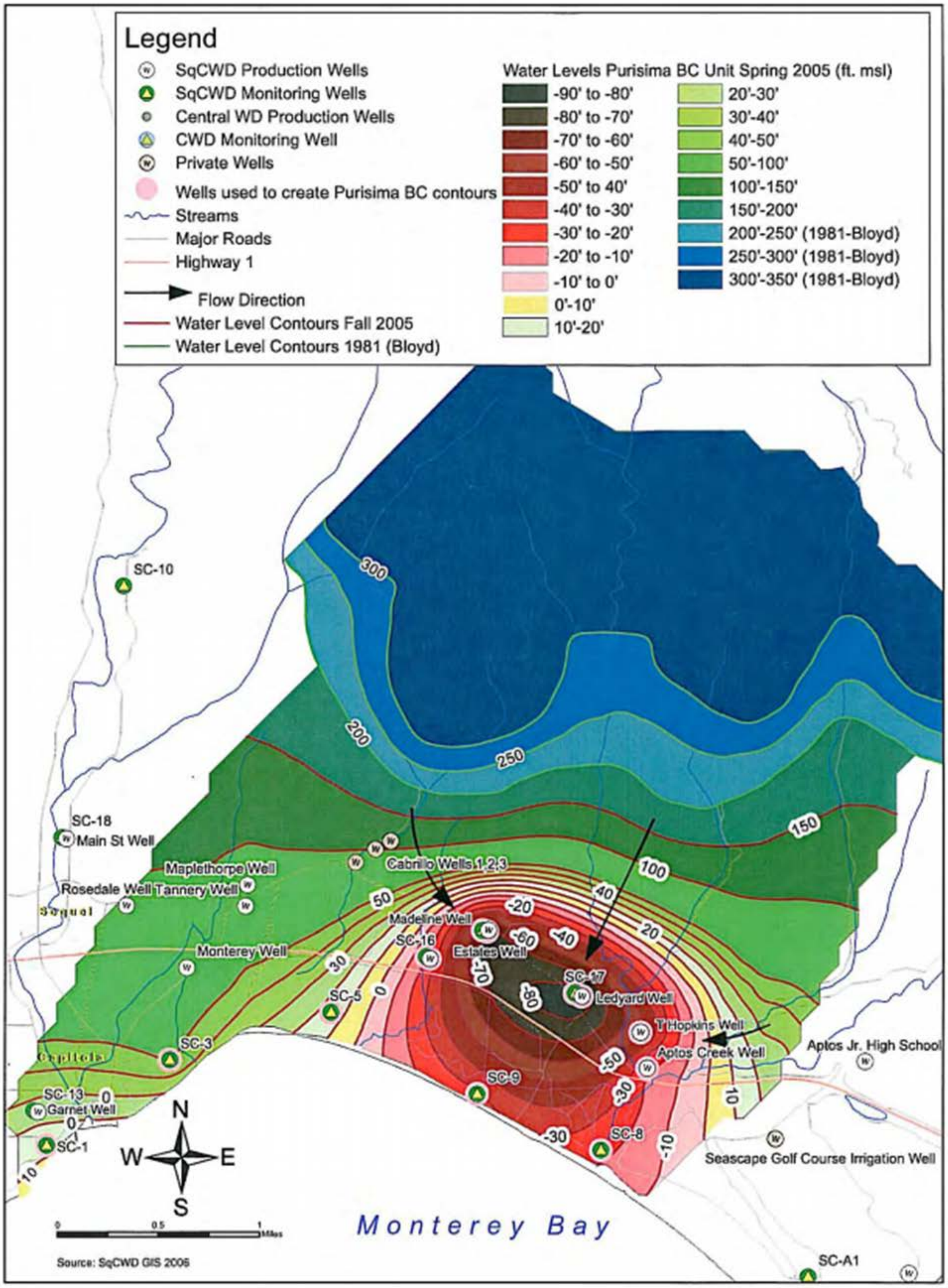



**Figure 2-25. Groundwater Elevation Contours in Purisima BC- Unit, Fall 2005**

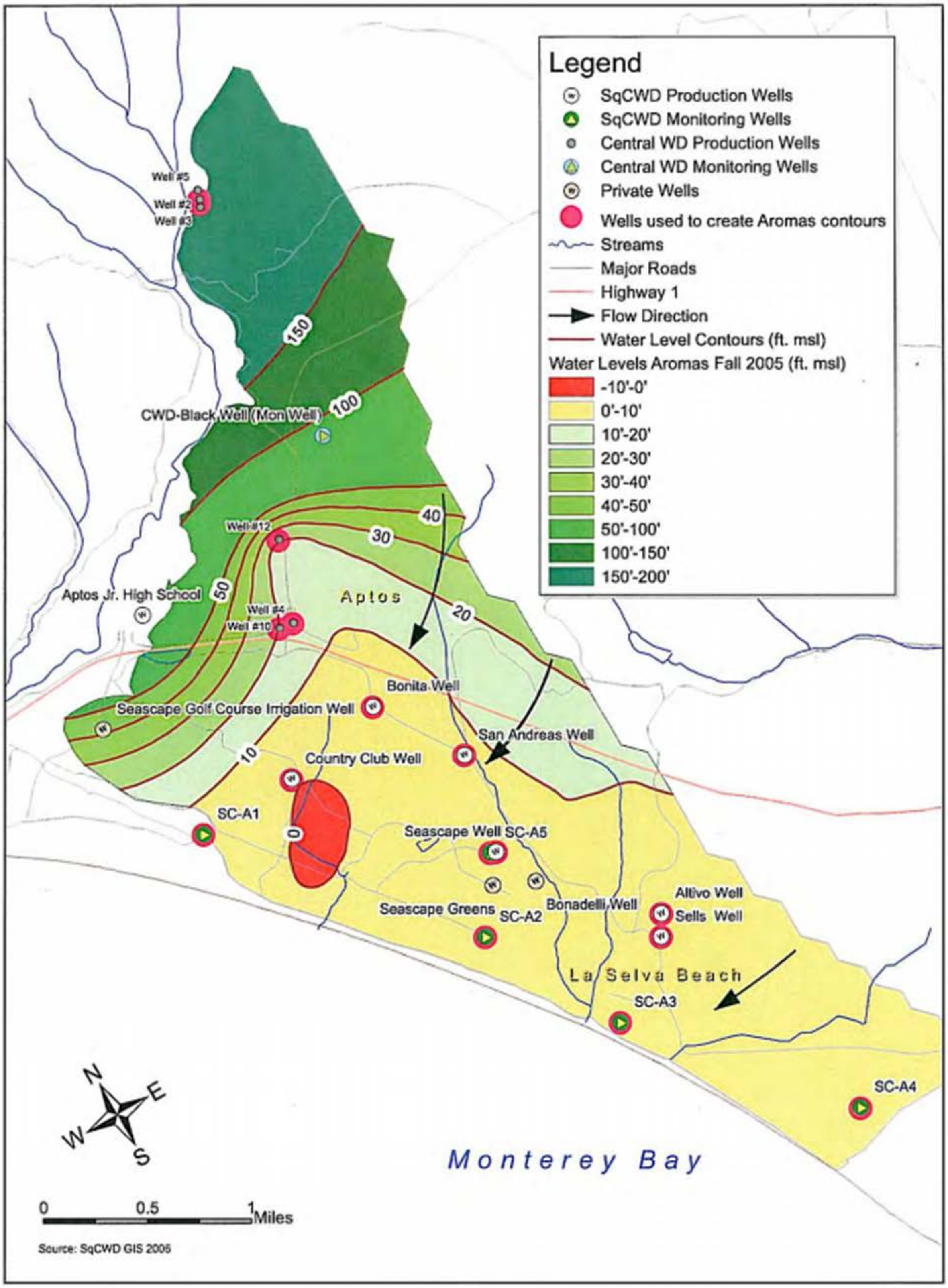



**Figure 2-26. Groundwater Elevation Contours in Aromas Red Sands and Pursima F-Unit, Fall 2005**

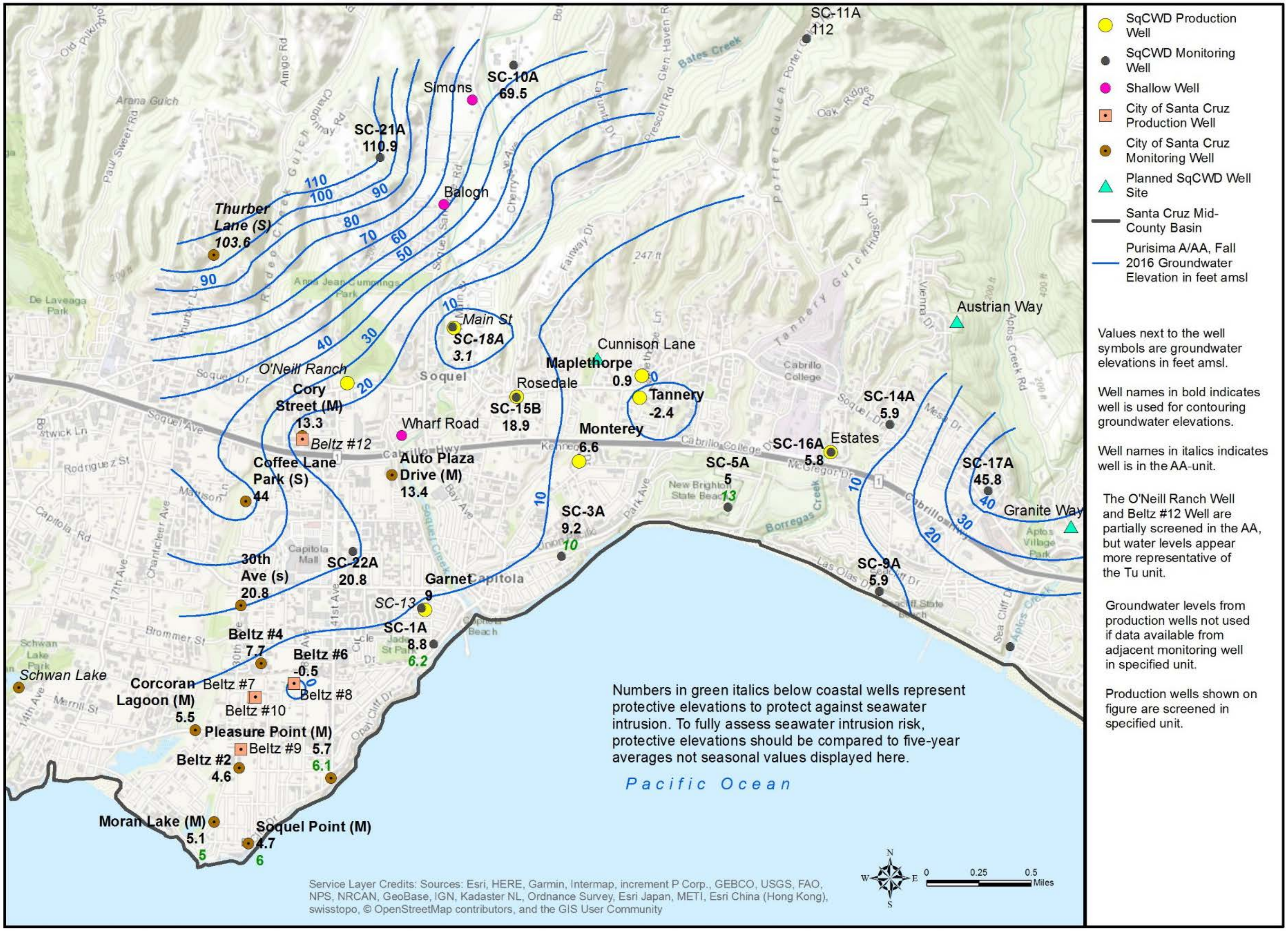



**Figure 2-28. Groundwater Elevation Contours in Purisima A and AA-Unit, Fall 2016**

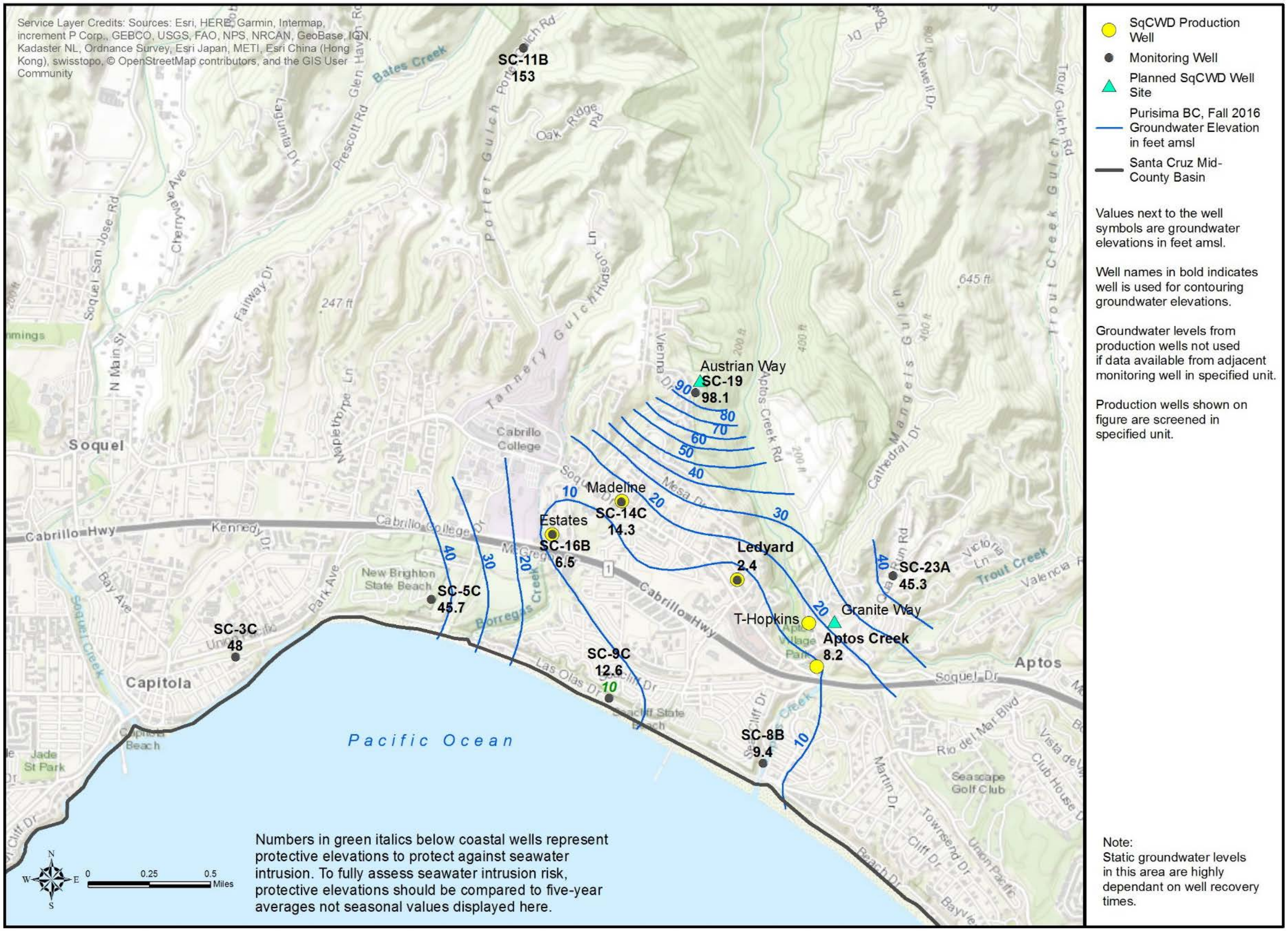



Figure 2-29. Groundwater Elevation Contours in Purisima BC-Unit, Fall 2016

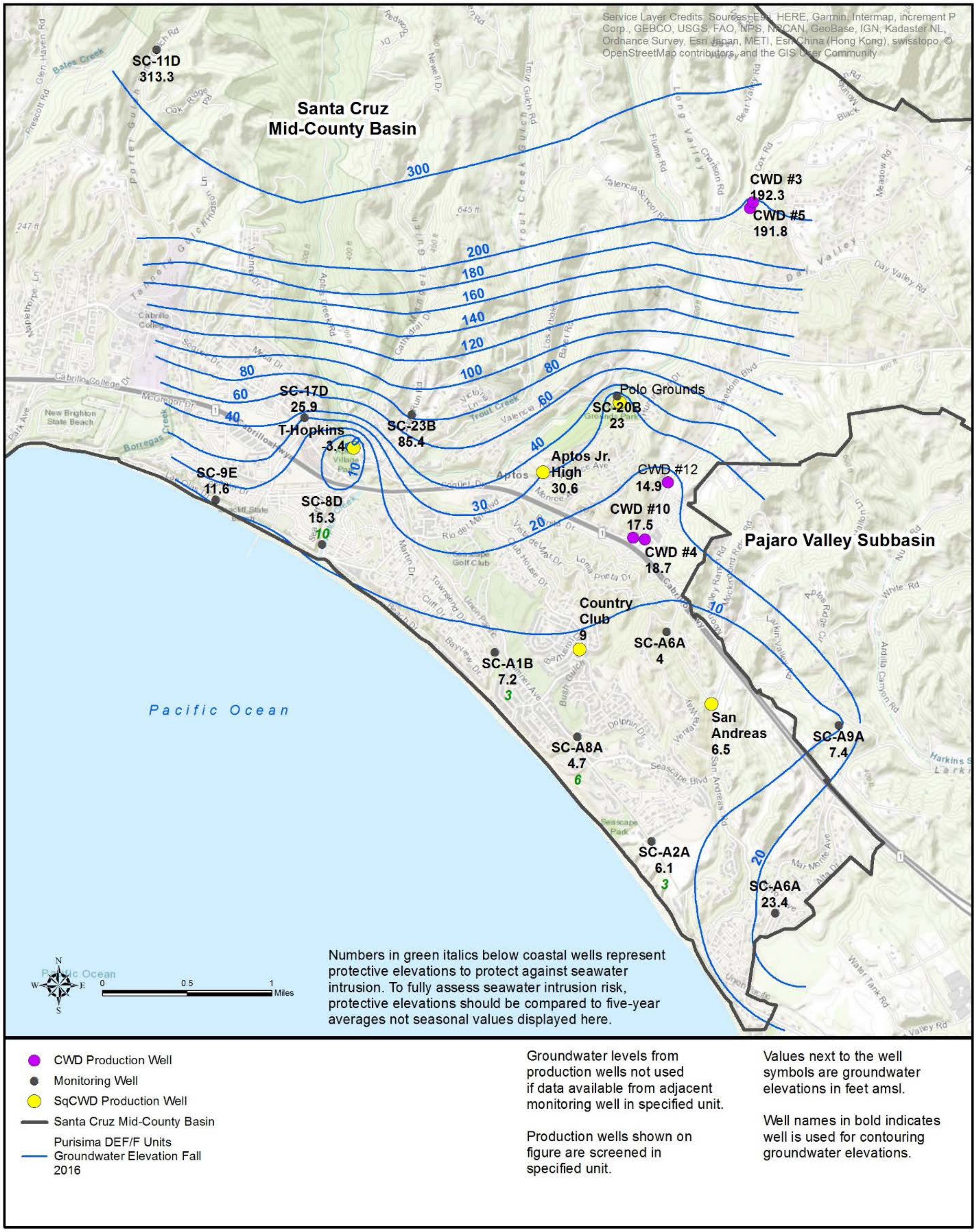



**Figure 2-30. Groundwater Elevation Contours in Purisima DEF/F-Unit, Fall 2016**

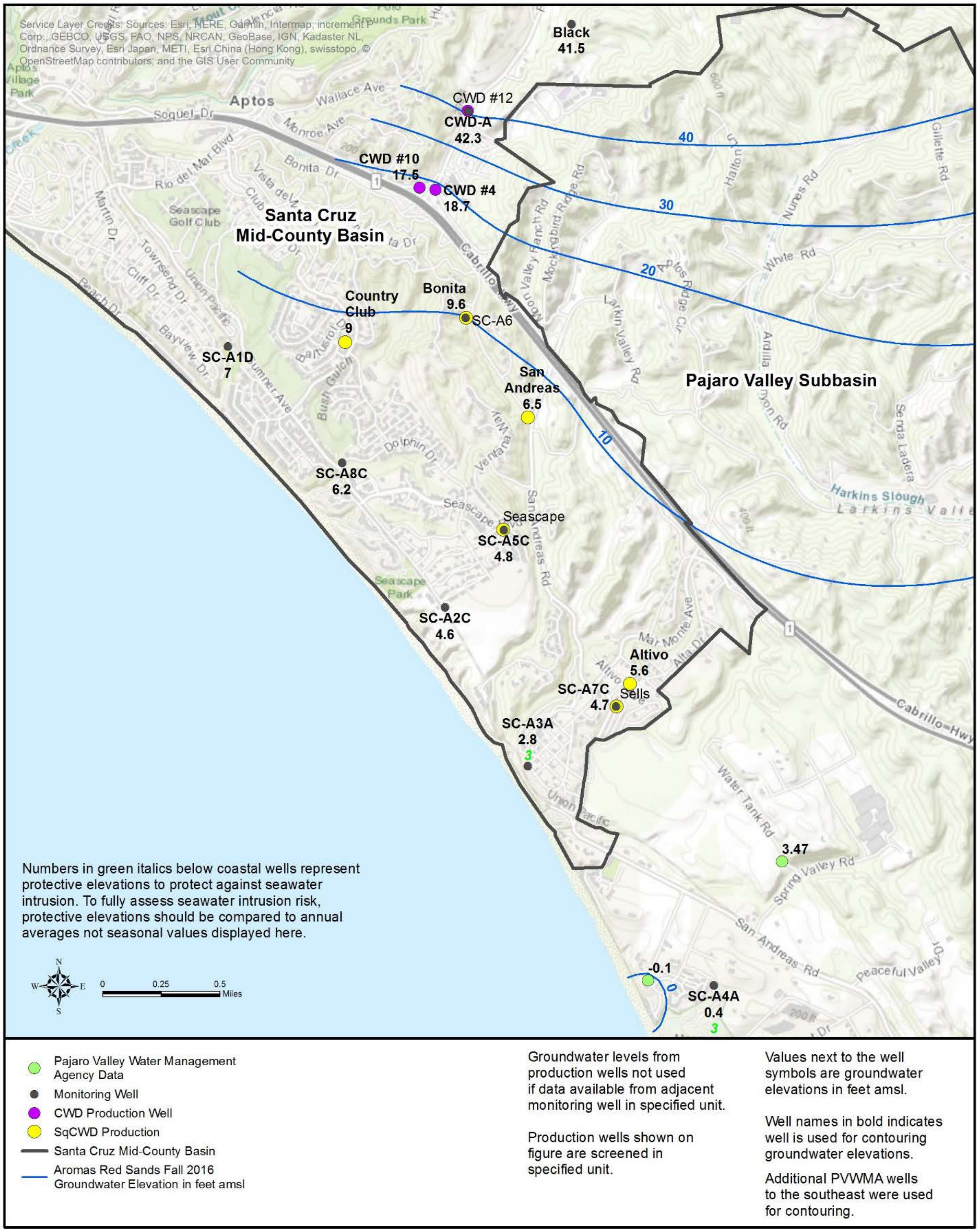



**Figure 2-31. Groundwater Elevation Contours in the Aromas Area, Fall 2016**

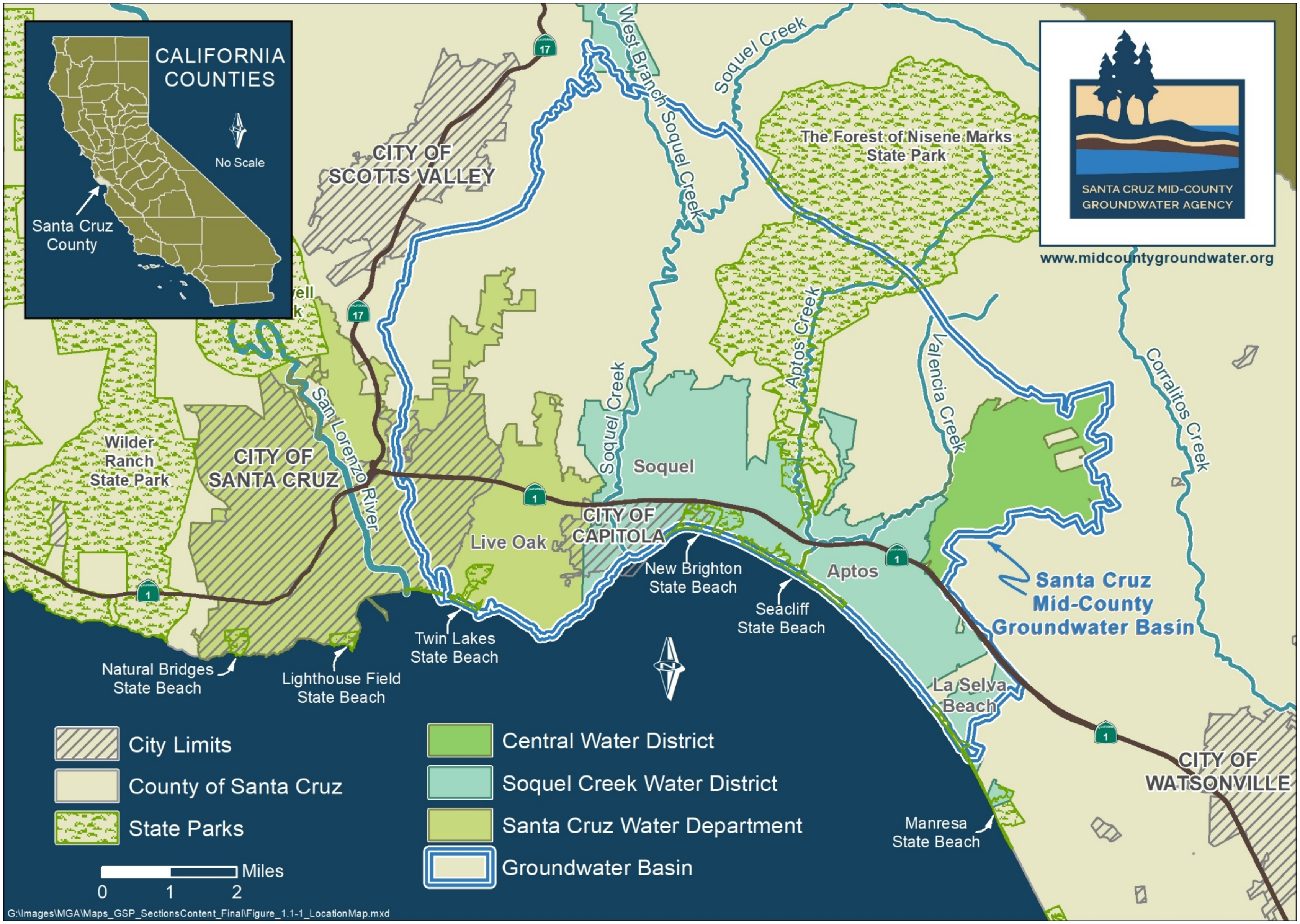



**Figure 1-1. Basin Location Map**

Please indicate County where your project is located here:

Santa Cruz

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# PETITION FOR EXTENSION OF TIME

Cal. Code Regs., tit. 23, § 842

Application 4017 Permit

Separate petitions are required for each water right. Incomplete forms may not be accepted. Complete this form if the time previously allowed in your permit within which to complete construction work and/or use of water has either expired or will expire and you require additional time. Provide attachments if necessary.

Water Code section 1396 requires an applicant to exercise due diligence in developing a water supply for beneficial use. The State Water Resources Control Board (State Water Board) will review the facts presented to determine whether: (a) due diligence has been exercised, (b) failure to comply with previous time requirements has been occasioned by obstacles which could not reasonably be avoided, and (c) that satisfactory progress will be made if an extension of time is granted. (Cal. Code Regs., tit. 23, § 844.) If an extension of time is not granted, the State Water Board may initiate formal action to either: (a) issue a license for the amount of water heretofore placed to beneficial use under the terms of the permit, or (b) revoke the permit.

If this is your first extension of time, answer the questions below for the permitted construction and water use development period. If previous extensions have been approved, answer these questions for the most recently approved extension period (for example, if a ten-year extension was previously granted, list the activities completed during the ten-year period).

I (we) request a 37 year extension of time to complete construction work and/or beneficial use of water.

**Construction**

Estimate the date construction work will begin, list the actions taken toward commencing or completing construction, and list the reasons why construction of the project was not completed.

Insert the attachment number here, if applicable: 1

**Complete Use of Water**

List reasons why use of water was not completed within time previously allowed.

Insert the attachment number here, if applicable: 2

**Quantities Diverted**

For direct diversion projects, list the cubic feet per second (cfs) or gallons per day (gpd) diverted during the maximum month of use, and the acre-feet per annum (afa) and identify the year this occurred. For storage projects, identify the maximum amount collected to storage and withdrawn for beneficial use in afa and identify the year this occurred.

| | Year | Maximum Diversion Rate (cfs or gpd) | Maximum Annual Amount (afa) |
|---|---|---|---|
| Direct Diversion | | | |
| Storage | 1989 | | About 1,622* |
| Beneficial Use | | | |

Insert the attachment number here, if applicable:

*THIS IS COMBINED USE FOR WATER DIVERTED UNDER A022318 & A023710.

**Information on Beneficial Uses**

| | |
|---|---|
| Number of Acres Irrigated | N/A |
| Number of Houses or People Served | 90,000+ |
| Per Capita Residential Water Use During the Maximum 30-day Period (gpd) | 53 GPCD |
| Extent of Past Use of Water for Any Other Purpose (identify gpd, cfs or afa) | |

Insert the attachment number here, if applicable:

**Approximate Amount Spent on Project** $ 78 million plus* *Annual Operating Budget in 2019

**Water Conservation –** If water conservation is required by your permit, provide the information below.

**Water Conservation Measures In Effect**

List the water conservation measures that are in effect within the place of use.

Insert the attachment number here, if applicable: 3

**Water Conservation Measures Planned**

List the water conservation measures that are feasible within the place of use and the date the measures will be implemented. Identify the quantities estimated to be conserved when the measures are implemented.

Insert the attachment number here, if applicable: 3

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that the above is true and correct to the best of my (our) knowledge and belief. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard

Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**

**(1) the form Environmental Information for Petitions, available at:**
**http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf**

**(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at:**
**http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/**

**(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)**

**Attachment to Petitions for Extension of Time**

**City of Santa Cruz**
**Permit 16123 (Application 22318) – San Lorenzo River, Felton Diversion Facility**
**Permit 16601 (Application 23710) – San Lorenzo River, Felton Diversion Facility**

*Attachment 1: Construction*

Additional time is required to maximize beneficial use under Permits 16123 and 16601 (Felton Permits). The City's extensive and successful water conservation program has enabled the City to serve any growth in its service area with the same level of diversions made under existing rights. To improve fish passage at the Felton diversion facility, permittee/licensee shall complete improvements to that facility consistent with National Marine Fisheries and California Department of Fish and Wildlife passage criteria that apply for coho salmon and steelhead.

*Attachment 2: Complete Use of Water*

The City is seeking approval of Petitions on its Felton Permits that add direct diversion as a method of diversion, add the Tait Street Diversion facility as an additional Point of Diversion, and adds the City's North Coast service areas and adjacent water district service areas for the allowed place of use. The City also proposes to divert water to Underground Storage under Permits 16123 and 16691 (and Licenses 1553 and 7200) via injection of surface water and subsequent recovery at its Beltz Injection Wells. The underground storage of surface water will protect groundwater quality from seawater intrusion and allow the City to use such stored water during drought years.

These modifications to the City's Felton Permits are necessary to maximum beneficial use. The City will bypass water at both the Felton and Tait Diversion Facilities according to the minimum streamflow schedule negotiated among the City, the National Marine Fisheries Service and California Department of Fish & Wildlife, as shown on the attached schedule.

*Attachment 3: Water Conservation Measures in Effect and Planned*

The City of Santa Cruz is actively implementing a variety of water conservation measures as described in its 2015 Urban Water Management Plan. Water activities include the following:

- Public and school information programs
- Landscape water survey
- Rain barrel distribution
- Lawn removal rebates
- Plumbing retrofits and rebates (laundry to landscape)
- Green business certifications
- Spray / rinse valve distribution
- Water budgets
- Turf removal rebates
- Graywater legalization and incentives
- Water restrictions and rationing

State of California
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300    Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

Permit 16123 (A022318)
Permit 16601 (A023710)

# ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

## DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

Insert the attachment number here, if applicable: 1

**Coordination with Regional Water Quality Control Board**

Date of Request: June 26, 2018

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ○ No

Will a waste discharge permit be required for the project? ○ Yes ○ No

If necessary, provide additional information below:

Improvements at the Felton Diversion Facility could require waste discharge requirements, or a waiver, from the Central Coast Regional Water Quality Control Board, as well as a 404 permit from the U.S. Army Corps of Engineers and/or a Streambed Alteration Agreement from the California Department of Fish & Wildlife. Those improvements, however, are not yet designed and finalized.

Insert the attachment number here, if applicable:

**Local Permits**

Date of Contact:

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: 
Date of Contact: October 3, 2018

Department: City of Santa Cruz - various depts
Phone Number: 

County Zoning Designation: Not Applicable - municipal lands

Are any county permits required for your project? If yes, indicate type below. ○ Yes ○ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

### Federal and State Permits

Check any additional agencies that may require permits or other approvals for your project:

- [x] Regional Water Quality Control Board
- [x] Department of Fish and Game
- [ ] Dept of Water Resources, Division of Safety of Dams
- [ ] California Coastal Commission
- [ ] State Reclamation Board
- [x] U.S. Army Corps of Engineers
- [ ] U.S. Forest Service
- [ ] Bureau of Land Management
- [ ] Federal Energy Regulatory Commission
- [ ] Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

For each agency from which a permit is required, provide the following information:

| Agency | Permit Type | Person(s) Contacted | Contact Date | Phone Number |
|---|---|---|---|---|
| CDFW | LSAA 1600 | Randi Adair | | |
| RWQCB | WDRs / waiver | Potential at this time | | |
| USACE | 404 permit | Potential at this time | | |

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

### Construction or Grading Activity

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

## Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ○ Yes ◉ No

Will another public agency be preparing an archeological report? ○ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ○ Yes ◉ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

## Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- ☒ Along the stream channel immediately downstream from each point of diversion
- ☒ Along the stream channel immediately upstream from each point of diversion
- ☒ At the place where water subject to this water right will be used

## Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

**All Water Right Holders Must Sign This Form:**
I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 7/28/2020 at Santa Cruz, CA .

Rosemary Menard

Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

**NOTE:**
- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

**Attachment to Environmental Information Form**
**City of Santa Cruz**

**License 9847 (Application A017913) – Newell Creek & Loch Lomond Reservoir**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change for all of the City's above referenced water right Licenses and Permits and Petitions for Extension of Time for the Felton Diversion Facility Permits 16123 and 16601. The Proposed Project also includes Petitions for Underground Storage for Licenses 1553 and 7200 and Permits 16123 and 16601.

Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations, make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights.

***Attachment No. 1***
**I. Description of Proposed Changes or Work Remaining to be Completed**

*Addition of Direct Diversion as a Method of Diversion:*
The City is seeking approval of Petitions that would explicitly state direct diversion as a method of diversion from the San Lorenzo River (also known as the Felton Diversion Facility) under Permits 16123 and 16601 and from Newell Creek at the City's Newell Creek Dam, which impounds Loch Lomond Reservoir, under License 9847. Currently, these rights authorize diversion to storage in the Loch Lomond Reservoir, but do not explicitly state the right to take water by direct diversion; an oversight in the original filings. The City has calculated that the licensed amount of use under License 9847 would not have been possible without allowance for direct diversion.

The addition of direct diversion as a method of diversion under these rights is needed to conform the water right Permits and License to the City's historical and current operations, and to provide operational flexibility and water supply reliability. Direct diversion of water has been and needs to continue to be an integral part of the operation of the Newell Creek and Felton Diversion facilities to meet annual demands.

*Underground Storage:*
The City proposes to redivert water to Underground Storage under Permits 16123 and 16691, and Licenses 1553 and 7200, via injection of surface water and subsequent recovery at the Beltz injection wells. The Beltz Wells are proposed to be added as Points of Rediversion under these rights. The underground storage of surface water will protect groundwater quality from seawater intrusion and allow the City to use such stored water during dry periods.

*Addition of Points of Diversion:*
The City proposes to add the Tait Street Diversion facility as an additional Point of Diversion to the Felton Permits 16123 and 16601 to allow for operational flexibility.

*Addition of Points of Diversion to Underground Storage:*
The City proposes to add Tait Street and Felton diversion facilities as Points of Diversion to Underground Storage.

*Addition of Points of Rediversion:*
The City proposes to add the Beltz Wells Nos. 8, 9, 10 and 12 as Points of Rediversion to Permits 16123 and 16691, and Licenses 1553 and 7200.

*Rate of Diversion:*
The combined rate of diversion to storage and direct diversion from the Felton and Tait Street Diversion Facilities under Permits 16123 and 16601 shall not exceed 20 cubic feet per second.

*Change in Place of Use:*
To provide flexibility to integrate water resources in the regional area, the City seeks to expand its currently allowed place of use under its Permits and Licenses to include adjacent services areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District, Soquel Creek Water District, the Santa Cruz Mid-County Groundwater Basin (Basin No. 3-027) and Santa Margarita Groundwater Basin (Basin No 3-027), as well as the City's North Coast service area.

*Change in Purpose of Use:*
The City proposes to consolidate its purposes of use under its Permits 16123 and 16601, and Licenses 1553, 7200 and 9847 to include municipal, domestic, industrial, recreation, fire protection, and protection of groundwater quality to prevent seawater intrusion.

*Addition of Fishery Terms:*
The City proposes to add, to each of its existing water right Licenses and Permits, the minimum bypass flows that the City has negotiated with the National Marine Fisheries Service and the California Department of Fish & Wildlife. Attached are the agreed upon minimum flow conditions in the San Lorenzo River during the allowed diversion seasons at both the Tait Street and Felton Diversion facilities, and in Newell Creek at Loch Lomond Reservoir.

*Extension of Time:*
The City is also seeking Extension of Time for Permits 16123 and 16601 to request an additional 37 years in which to put the water to full beneficial use. The Permits expired on December 31, 2006, and additional time is required to meet future growth demands set forth in the City of Santa Cruz, Santa Cruz County, City of Scotts Valley and City of Capitola's general plans. The Petitions do not represent an increase in the amount of water allowed to be diverted.

*Environmental Document:*
As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project.

# City of Santa Cruz
# Photographs to Accompany Petitions

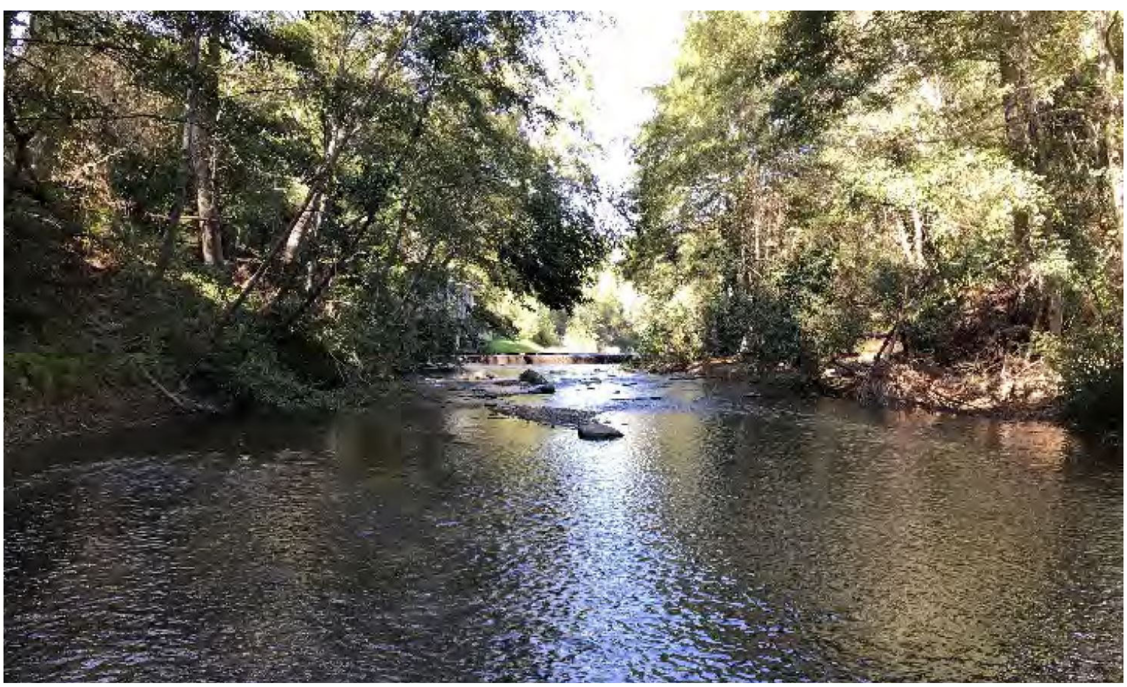
## Newell Creek & Loch Lomond Reservoir
## License 9847 (Application A017913)

## San Lorenzo River – Felton Diversion
## Permit 16123 (Application A022318)
## Permit 16601 (Application A023710)

## San Lorenzo River – Tait Street Diversion
## License 1553 (Application A004017)
## License 7200 (Application A005215)

FELTON DIVERSION FACILITY

MARCH 2009



FELTON DIVERSION FACILITY- LOOKING DOWNSTREAM

JANUARY 2019

FELTON DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

LOCH LOMOND LAKE- NEWELL DAM

JANUARY 2019

NEWELL CREEK- LOOKING DOWNSTREAM

FEBRUARY 2012

NEWELL CREEK- LOOKING UPSTREAM

AUGUST 2016

TAIT WELL 1B

JANUARY 2018

TAIT DIVERSION DAM

JANUARY 2019

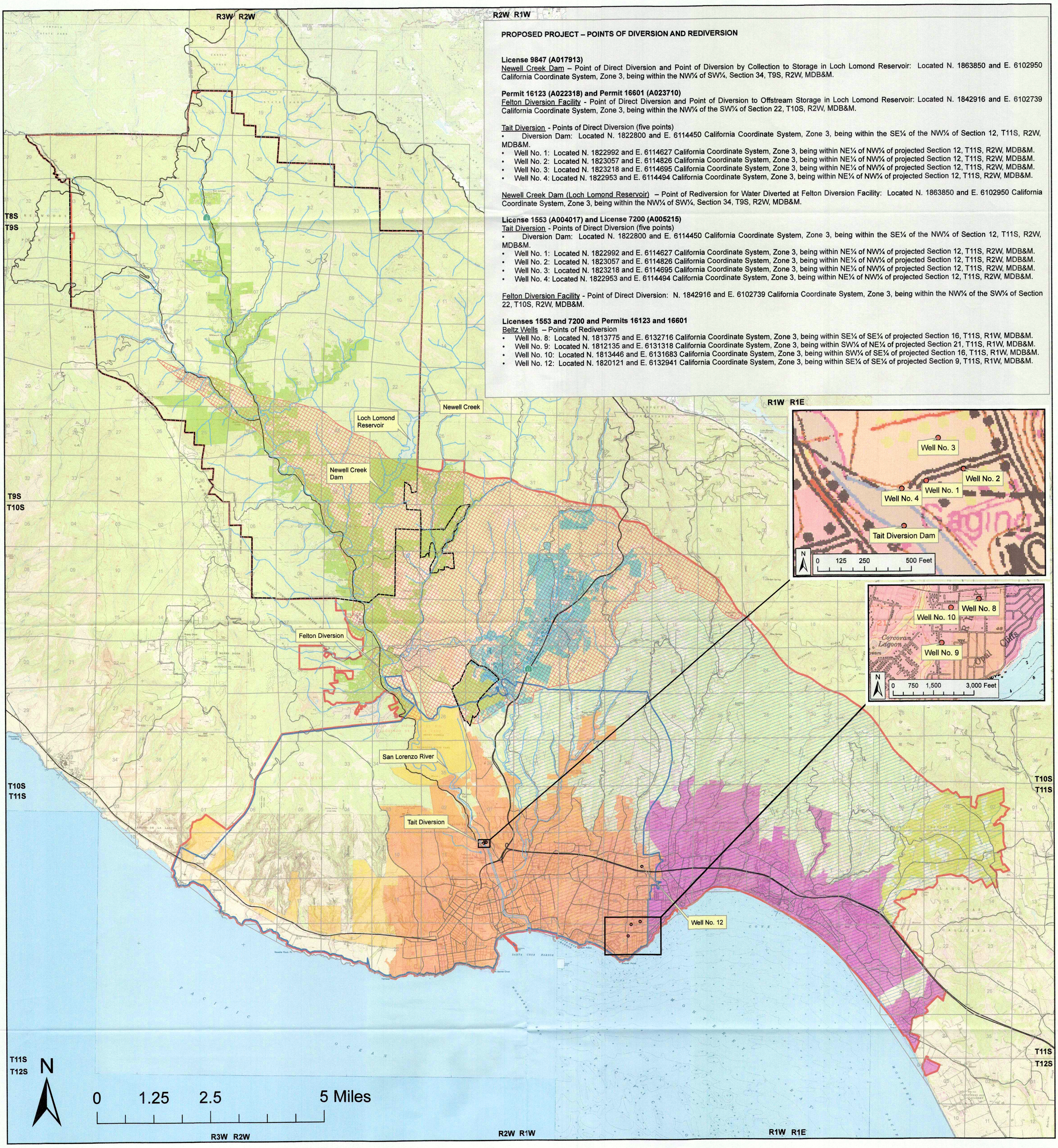
TAIT DIVERSION FACILITY – LOOKING DOWNSTREAM

JANUARY 2019

TAIT DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

# MAP TO ACCOMPANY PETITIONS FOR CHANGE
# LICENSES 1553, 7200, 9847 (A004017, A005215, AND A017913, RESPECTIVELY) AND PERMITS 16123 AND 16601 (A022318 AND A023710, RESPECTIVELY)
# CITY OF SANTA CRUZ
# SANTA CRUZ COUNTY, CA




San Lorenzo River and Tributaries

State Highways

**Water Service Areas**

- Central Water District
- San Lorenzo Valley Water District
- Scotts Valley Water District
- Soquel Creek Water District
- City of Santa Cruz' Service Area
- City of Santa Cruz' North Coast Service Area

**Places of Use**

- License # 9847
- License #'s 1553, 7200; Permit #'s 16601, 16123
- Proposed Place of Use Expanded

**Groundwater Basins**

- Santa Cruz Mid-County
- Santa Margarita

**CERTIFICATE OF ENGINEER**

I, NICHOLAS F. BONSIGNORE OF 2151 RIVER PLAZA DR., SUITE 100, SACRAMENTO, CALIFORNIA, DO HEREBY CERTIFY THAT THIS MAP WAS PREPARED UNDER MY DIRECT SUPERVISION BASED U.S.G.S. 7.5-MINUTE QUADRANGLES FOR BIG BASIN, CASTLE ROCK RIDGE, DAVENPORT, FELTON, LAUREL, SANTA CRUZ, SOQUEL, AND WATSONVILLE WEST, FROM PUBLISHED SERVICE AREA MAPS FOR CENTRAL WATER DISTRICT, SAN LORENZO VALLEY WATER DISTRICT, SCOTTS VALLEY WATER DISTRICT, SOQUEL CREEK WATER DISTRICT, MAPS ON FILE WITH SANTA CRUZ WATER DEPARTMENT AND SANTA CRUZ WATER DEPARTMENT LIMITED, AND OTHER INFORMATION PROVIDED BY CITY OF SANTA CRUZ, AND THAT IT CORRECTLY REPRESENTS THE PROJECT DESCRIBED IN THE ACCOMPANYING PETITIONS, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

7/23/2020

NICHOLAS F. BONSIGNORE
R.C.E NO. 39422
EXPIRES 12-31-2021

DATE

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation

Nicholas F. Bonsignore, P.E.
Robert C. Wagner, P.E.
Paula J. Whealen

Martin Berber, P.E.
Patrick W. Ervin, P.E.
David P. Lounsbury, P.E.
Vincent Maples, P.E.
Leah Orloff, Ph.D, P.E.
David H. Peterson, C.E.G., C.H.G.
Ryan E. Stolfus

January 6, 2021

Mr. Sam Boland-Brien
Supervising Engineer - Petition, Licensing & Registration
State Water Resources Control Board
P.O. Box 2000
Sacramento, CA 95812-2000

**Re: City of Santa Cruz**
**Petitions for Change and Extension of Time: Permits 16123 and 16601 (Applications A022318 and A023710 respectively)**
**Petitions for Change: Licenses 1553, 7200 and 9847 (Applications A004017, A005215 and A017913 respectively)**

Dear Mr. Boland-Brien:

In December 2006, the City of Santa Cruz filed Petitions for Extension of Time for Permits 16123 and 16601, and Petitions for Change for License 9847 and Permits 16123 and 16601 with the Division. The Division issued a Public Notice of these Petitions on October 8, 2008. Subsequently, the City determined that additional modifications were necessary and filed revised Petitions on these same rights on January 29, 2019 and again on August 5, 2020.

At this time, the City would like to amend its August 5, 2020 Petitions in their entirety and are submitting the enclosed amended Petitions for the referenced rights. The Petition revisions were made to respond to comments provided by you and your staff.

An Initial Study and Notice of Preparation of an Environmental Impact Report in support of the enclosed Petitions was issued by the City in 2018. The City is well into the preparation of a draft environmental impact report. Therefore, we request that these revised Petitions be issued for public notice as soon as possible to incorporate and/or address comments in the environmental document.

Enclosed are the executed Petitions, Underground Storage Supplements, Environmental Information forms, site photographs and accompanying map. In January 2019, Petition filing fees in the amount of $13,114.72 were submitted to the Division, with an $850 environmental fee for the California Department of Fish and Wildlife. Additional filing fees in the amount of $2,394.48

were submitted with the August 5, 2020 revised Petitions. We understand that no additional filing fees are due currently. I am also sending this letter and Petition package to you via email.

Please contact me if you have any questions regarding the enclosed Petitions.

Very truly yours,

WAGNER & BONSIGNORE
CONSULTING CIVIL ENGINEERS

Paula J. Whealen

Paula J. Whealen, Principal

Encl.

cc: (via email)
Rosemary Menard, City of Santa Cruz
Chris Berry, City of Santa Cruz
Ryan Bezerra, Bartkiewicz Kronick & Shanahan
Randi Adair, California Department of Fish & Wildlife
Amanda Morrison, NOAA National Marine Fisheries Service

Please indicate County where your project is located here:

Santa Cruz

MAIL FORM AND ATTACHMENTS TO:
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# PETITION FOR CHANGE

Separate petitions are required for each water right. Mark all areas that apply to your proposed change(s). Incomplete forms may not be accepted. Location and area information must be provided on maps in accordance with established requirements. (Cal. Code Regs., tit. 23, § 715 et seq.) Provide attachments if necessary.

- ☐ **Point of Diversion** Wat. Code, § 1701
- ☒ **Point of Rediversion** Cal. Code Regs., tit. 23, § 791(e)
- ☒ **Place of Use** Wat. Code, § 1701
- ☒ **Purpose of Use** Wat. Code, § 1701
- ☐ **Distribution of Storage** Cal. Code Regs., tit. 23, § 791(e)
- ☐ **Temporary Urgency** Wat. Code, § 1435
- ☐ **Instream Flow Dedication** Wat. Code, § 1707
- ☐ **Waste Water** Wat. Code, § 1211
- ☐ **Split** Cal. Code Regs., tit. 23, § 836
- ☒ **Terms or Conditions** Cal. Code Regs., tit. 23, § 791(e)
- ☒ **Other** Addition of Underground Storage

| Application | Permit | License | Statement |
|---|---|---|---|
| 4017 | | 1553 | |

I (we) hereby petition for change(s) noted above and described as follows:

**Point of Diversion or Rediversion** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Present: See Attached

Proposed: See Attached

**Place of Use** – Identify area using Public Land Survey System descriptions to ¼-¼ level; for irrigation, list number of acres irrigated.

Present: See Attached

Proposed: See Attached

**Purpose of Use**

Present: See Attached

Proposed: See Attached

**Split**

Provide the names, addresses, and phone numbers for all proposed water right holders.

In addition, provide a separate sheet with a table describing how the water right will be split between the water right holders: for each party list amount by direct diversion and/or storage, season of diversion, maximum annual amount, maximum diversion to offstream storage, point(s) of diversion, place(s) of use, and purpose(s) of use. Maps showing the point(s) of diversion and place of use for each party should be provided.

**Distribution of Storage**

Present:

Proposed:

**Temporary Urgency**
This temporary urgency change will be effective from [ ] to [ ].

Include an attachment that describes the urgent need that is the basis of the temporary urgency change and whether the change will result in injury to any lawful user of water or have unreasonable effects on fish, wildlife or instream uses.

**Instream Flow Dedication** – Provide source name and identify points using both Public Land Survey System descriptions to ¼-¼ level and California Coordinate System (NAD 83).

Upstream Location:

Downstream Location:

List the quantities dedicated to instream flow in either: ☐ cubic feet per second or ☐ gallons per day:

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

Will the dedicated flow be diverted for consumptive use at a downstream location? ○ Yes ○ No
If yes, provide the source name, location coordinates, and the quantities of flow that will be diverted from the stream.

**Waste Water**
If applicable, provide the reduction in amount of treated waste water discharged in cubic feet per second.

Will this change involve water provided by a water service contract which prohibits your exclusive right to this treated waste water? ○ Yes ○ No

Will any legal user of the treated waste water discharged be affected? ○ Yes ○ No

**General Information** – For all Petitions, provide the following information, if applicable to your proposed change(s).

Will any current Point of Diversion, Point of Storage, or Place of Use be abandoned? ○ Yes ◉ No

I (we) have access to the proposed point of diversion or control the proposed place of use by virtue of:
☒ ownership ☐ lease ☐ verbal agreement ☐ written agreement

If by lease or agreement, state name and address of person(s) from whom access has been obtained.

Give name and address of any person(s) taking water from the stream between the present point of diversion or rediversion and the proposed point of diversion or rediversion, as well as any other person(s) known to you who may be affected by the proposed change.

Information in State Water Resources Control Board files.

**All Right Holders Must Sign This Form:** I (we) declare under penalty of perjury that this change does not involve an increase in the amount of the appropriation or the season of diversion, and that the above is true and correct to the best of my (our) knowledge and belief. Dated 7/28/2020 at Santa Cruz, CA.

Rosemary Menard
Right Holder or Authorized Agent Signature

Right Holder or Authorized Agent Signature

**NOTE: All petitions must be accompanied by:**
**(1) the form Environmental Information for Petitions, including required attachments, available at:**
**http://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/pet_info.pdf**
**(2) Division of Water Rights fee, per the Water Rights Fee Schedule, available at:**
**http://www.waterboards.ca.gov/waterrights/water_issues/programs/fees/**
**(3) Department of Fish and Wildlife fee of $850 (Pub. Resources Code, § 10005)**

**City of Santa Cruz**

**Attachment to Petition for Change**
**License 9847 (Application A017913)**
**Newell Creek Diversion**

**Point of Diversion**

*Present:* Newell Creek Dam – Diversion to storage from Newell Creek located South 3,800' and East 1,230' from NW corner of Section 34, T9S, R2W, MDB&M, within NW1/4 of SW1/4 of said Section 34 for storage in Loch Lomond Reservoir.

*Proposed:*[1] Newell Creek Dam – Point of Direct Diversion and Point of Diversion by Collection to Storage in Loch Lomond Reservoir: Located N.1863850 and E.6102950 California Coordinate System, Zone 3, being within the NW¼ of SW¼, Section 34, T9S, R2W, MDB&M.

**Method of Diversion**

*Present:* Diversion to storage from Newell Creek for storage in Loch Lomond Reservoir

*Proposed:* Diversion to storage from Newell Creek for storage in Loch Lomond Reservoir and direct diversion from Newell Creek.

**Place of Use**

*Present:* At Loch Lomond Reservoir and in the San Lorenzo Basin, including Upper San Lorenzo Valley, Scotts Valley and Santa Cruz, being within Townships 8S, 9S, 10S, and 11S, Ranges 1W, 2W, and 3W, MDB&M, as shown on map filed with State Water Resources Control Board.

*Proposed:* At Loch Lomond Reservoir, and in the City of Santa Cruz Water Department's service area, including its North Coast service area; the service areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District and Soquel Creek Water District; Santa Cruz Mid-County Groundwater Basin (DWR Bulletin 118 Basin No. 3-001) and Santa Margarita Groundwater Basin (DWR Bulletin 118 Basin No. 3-027); all, as shown on a map filed with State Water Resources Control Board accompanying this Petition.

**Purpose of Use**

*Present:* Municipal, domestic, industrial, recreational and fire protection.
*Proposed:* Municipal, domestic, industrial, recreational, fire protection and protection of water quality.

[1] There is no change in the physical Point of Diversion location. The description has been revised to provide a California Coordinate System, Zone 3 coordinate point.

**Terms and Conditions**

*Proposed:*
1) The City will release water from Loch Lomond Reservoir to Newell Creek according to the minimum streamflow schedule negotiated among the City, the National Marine Fisheries Service and the California Department of Fish & Wildlife as shown on the attached schedule.

2) Add maximum rate of direct diversion of 31 cubic feet per second.

3) No delivery of water diverted under this right for use by a water supplier other than the City of Santa Cruz Water Department will occur during Hydrologic Conditions 4 and 5, as defined in the attached Exceedance Category Limits Table.

**Reason for Proposed Change**
Modification of the City of Santa Cruz' rights are necessary to better utilize surface water within existing allocations, increase the flexibility of the City's water supply, and extend time to beneficially use water allowed under existing rights, in light of, among other things, significant water conservation measures.

| Month | Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2] | | | | |
|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (wettest)* |
| Oct | <=459 | 460-539 | 540-709 | 710-875 | >875 |
| Nov | <=1186 | 1187-1497 | 1498-1827 | 1828-2485 | >2485 |
| Dec | <=2397 | 2398-3134 | 3135-5642 | 5643-10196 | >10196 |
| Jan | <=4322 | 4323-8456 | 8457-16694 | 16695-28019 | >28019 |
| Feb | <=8442 | 8443-16368 | 16369-29140 | 29141-42995 | >42995 |
| Mar | <=13004 | 13005-22948 | 22949-35371 | 35372-57968 | >57968 |
| Apr | <=14203 | 14204-24491 | 24492-39487 | 39488-67884 | >67884 |
| May | <=15448 | 15449-25279 | 25280-41659 | 41660-71412 | >71412 |
| Jun | <=16005 | 16006-26116 | 26117-43123 | 43124-73420 | >73420 |
| Jul | <=16364 | 16365-26819 | 26820-44073 | 44074-74718 | >74718 |
| Aug | <=16653 | 16654-27355 | 27356-44799 | 44800-75591 | >75591 |
| Sep | <=16978 | 16979-27843 | 27844-45398 | 45399-76368 | >76368 |

cfs = cubic feet per second

Notes:

1. The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.
2. To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.
   a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.
   b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.
   c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

Agreed Flows for the Newell Creek Dam,
as Measured at the City Gage immediately downstream of Newell Creek Dam

| | Exception Minimum (cfs)[1] | Base Flow (cfs) | | | | |
|---|---|---|---|---|---|---|
| | | *Hydrologic Condition 5* *(driest)* | *Hydrologic Condition 4* *(dry)* | *Hydrologic Condition 3* *(normal)* | *Hydrologic Condition 2* *(wet)* | *Hydrologic Condition 1* *(very wet)* |
| Jan | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Feb | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Mar | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Apr | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| May | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Jun | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Jul | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Aug | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Sep | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Oct | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Nov | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Dec | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

cfs = cubic feet per second.

Note:

1. Exception minimum flows are triggered and would supersede base flow requirements when storage in Loch Lomond Reservoir falls below the following level: 2000 million gallons (mg) during January through June, 1800 mg during July, 1500 mg during August through November, or 1700 mg during December.

License 9847 (A017913)

State of California
State Water Resources Control Board
**DIVISION OF WATER RIGHTS**
**P.O. Box 2000, Sacramento, CA 95812-2000**
Tel: (916) 341-5300 Fax: (916) 341-5400
http://www.waterboards.ca.gov/waterrights

# ENVIRONMENTAL INFORMATION FOR PETITIONS

This form is required for all petitions.

Before the State Water Resources Control Board (State Water Board) can approve a petition, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared, a determination must be made of who is responsible for its preparation. As the petitioner, you are responsible for all costs associated with the environmental evaluation and preparation of the required CEQA documents. Please answer the following questions to the best of your ability and submit any studies that have been conducted regarding the environmental evaluation of your project. If you need more space to completely answer the questions, please number and attach additional sheets.

**DESCRIPTION OF PROPOSED CHANGES OR WORK REMAINING TO BE COMPLETED**

For a petition for change, provide a description of the proposed changes to your project including, but not limited to, type of construction activity, structures existing or to be built, area to be graded or excavated, increase in water diversion and use (up to the amount authorized by the permit), changes in land use, and project operational changes, including changes in how the water will be used. For a petition for extension of time, provide a description of what work has been completed and what remains to be done. Include in your description any of the above elements that will occur during the requested extension period.

Insert the attachment number here, if applicable: 1

**Coordination with Regional Water Quality Control Board**

For change petitions only, you must request consultation with the Regional Water Quality Control Board regarding the potential effects of your proposed change on water quality and other instream beneficial uses. (Cal. Code Regs., tit. 23, § 794.) In order to determine the appropriate office for consultation, see: http://www.waterboards.ca.gov/waterboards_map.shtml. Provide the date you submitted your request for consultation here, then provide the following information.

Date of Request: June 26, 2018

Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ○ Yes ○ No

Will a waste discharge permit be required for the project? ○ Yes ○ No

If necessary, provide additional information below:

Improvements at the Felton Diversion Facility could require waste discharge requirements, or a waiver, from the Central Coast Regional Water Quality Control Board, as well as a 404 permit from the U.S. Army Corps of Engineers and/or a Streambed Alteration Agreement from the California Department of Fish & Wildlife. Those improvements, however, are not yet designed and finalized.

Insert the attachment number here, if applicable:

**Local Permits**

For temporary transfers only, you must contact the board of supervisors for the county(ies) both for where you currently store or use water and where you propose to transfer the water. (Wat. Code § 1726.) Provide the date you submitted your request for consultation here.

Date of Contact:

For change petitions only, you should contact your local planning or public works department and provide the information below.

Person Contacted: 

Date of Contact: October 3, 2018

Department: City of Santa Cruz - various depts

Phone Number: 

County Zoning Designation: Not Applicable - municipal lands

Are any county permits required for your project? If yes, indicate type below. ○ Yes ○ No

☐ Grading Permit ☐ Use Permit ☐ Watercourse ☐ Obstruction Permit

☐ Change of Zoning ☐ General Plan Change ☐ Other (explain below)

If applicable, have you obtained any of the permits listed above? If yes, provide copies. ○ Yes ○ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Federal and State Permits**

Check any additional agencies that may require permits or other approvals for your project:

- [x] Regional Water Quality Control Board
- [x] Department of Fish and Game
- [ ] Dept of Water Resources, Division of Safety of Dams
- [ ] California Coastal Commission
- [ ] State Reclamation Board
- [x] U.S. Army Corps of Engineers
- [ ] U.S. Forest Service
- [ ] Bureau of Land Management
- [ ] Federal Energy Regulatory Commission
- [ ] Natural Resources Conservation Service

Have you obtained any of the permits listed above? If yes, provide copies. ◯ Yes ◯ No

For each agency from which a permit is required, provide the following information:

| Agency | Permit Type | Person(s) Contacted | Contact Date | Phone Number |
|---|---|---|---|---|
| CDFW | LSAA 1600 | Randi Adair | | |
| RWQCB | WDRs / waiver | Potential at this time | | |
| USACE | 404 permit | Potential at this time | | |

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

**Construction or Grading Activity**

Does the project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank or riparian habitat of any stream or lake? ◯ Yes ◯ No

If necessary, provide additional information below:

Insert the attachment number here, if applicable:

### Archeology

Has an archeological report been prepared for this project? If yes, provide a copy. ◯ Yes ◉ No

Will another public agency be preparing an archeological report? ◯ Yes ◉ No

Do you know of any archeological or historic sites in the area? If yes, explain below. ◯ Yes ◉ No

If necessary, provide additional information below:

| |
|---|
| |

Insert the attachment number here, if applicable: [ ]

### Photographs

For all petitions other than time extensions, attach complete sets of color photographs, clearly dated and labeled, showing the vegetation that exists at the following three locations:

- ☒ Along the stream channel immediately downstream from each point of diversion
- ☒ Along the stream channel immediately upstream from each point of diversion
- ☒ At the place where water subject to this water right will be used

### Maps

For all petitions other than time extensions, attach maps labeled in accordance with the regulations showing all applicable features, both present and proposed, including but not limited to: point of diversion, point of rediversion, distribution of storage reservoirs, point of discharge of treated wastewater, place of use, and location of instream flow dedication reach. (Cal. Code Regs., tit. 23, §§ 715 et seq., 794.)

Pursuant to California Code of Regulations, title 23, section 794, petitions for change submitted without maps may not be accepted.

**All Water Right Holders Must Sign This Form:**

I (we) hereby certify that the statements I (we) have furnished above and in the attachments are complete to the best of my (our) ability and that the facts, statements, and information presented are true and correct to the best of my (our) knowledge. Dated 7/28/2020 at Santa Cruz, CA .

Rosemary Menard

Water Right Holder or Authorized Agent Signature

Water Right Holder or Authorized Agent Signature

**NOTE:**

- **Petitions for Change may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game. (Cal. Code Regs., tit. 23, § 794.)**
- **Petitions for Temporary Transfer may not be accepted unless you include proof that a copy of the petition was served on the Department of Fish and Game and the board of supervisors for the county(ies) where you currently store or use water and the county(ies) where you propose to transfer the water. (Wat. Code § 1726.)**

**Attachment to Environmental Information Form**
**City of Santa Cruz**

**License 9847 (Application A017913) – Newell Creek & Loch Lomond Reservoir**

**Permit 16123 (Application A022318) – San Lorenzo River – Felton Diversion**
**Permit 16601 (Application A023710) – San Lorenzo River – Felton Diversion**

**License 1553 (Application A004017) – San Lorenzo River – Tait Street Diversion**
**License 7200 (Application A005215) – San Lorenzo River – Tait Street Diversion**

The Proposed Project involves Petitions for Change for all of the City's above referenced water right Licenses and Permits and Petitions for Extension of Time for the Felton Diversion Facility Permits 16123 and 16601. The Proposed Project also includes Petitions for Underground Storage for Licenses 1553 and 7200 and Permits 16123 and 16601.

Modification of the City's existing water rights through the petition process is necessary to comply with negotiated state and federal fishery conditions, better utilize surface water within existing allocations, make more effective use of existing diversion locations, thereby increasing the City's flexibility and ability to make beneficial use under its rights.

***Attachment No. 1***
## I. Description of Proposed Changes or Work Remaining to be Completed

*Addition of Direct Diversion as a Method of Diversion:*
The City is seeking approval of Petitions that would explicitly state direct diversion as a method of diversion from the San Lorenzo River (also known as the Felton Diversion Facility) under Permits 16123 and 16601 and from Newell Creek at the City's Newell Creek Dam, which impounds Loch Lomond Reservoir, under License 9847. Currently, these rights authorize diversion to storage in the Loch Lomond Reservoir, but do not explicitly state the right to take water by direct diversion; an oversight in the original filings. The City has calculated that the licensed amount of use under License 9847 would not have been possible without allowance for direct diversion.

The addition of direct diversion as a method of diversion under these rights is needed to conform the water right Permits and License to the City's historical and current operations, and to provide operational flexibility and water supply reliability. Direct diversion of water has been and needs to continue to be an integral part of the operation of the Newell Creek and Felton Diversion facilities to meet annual demands.

*Underground Storage:*
The City proposes to redivert water to Underground Storage under Permits 16123 and 16691, and Licenses 1553 and 7200, via injection of surface water and subsequent recovery at the Beltz injection wells. The Beltz Wells are proposed to be added as Points of Rediversion under these rights. The underground storage of surface water will protect groundwater quality from seawater intrusion and allow the City to use such stored water during dry periods.

*Addition of Points of Diversion:*
The City proposes to add the Tait Street Diversion facility as an additional Point of Diversion to the Felton Permits 16123 and 16601 to allow for operational flexibility.

*Addition of Points of Diversion to Underground Storage:*
The City proposes to add Tait Street and Felton diversion facilities as Points of Diversion to Underground Storage.

*Addition of Points of Rediversion:*
The City proposes to add the Beltz Wells Nos. 8, 9, 10 and 12 as Points of Rediversion to Permits 16123 and 16691, and Licenses 1553 and 7200.

*Rate of Diversion:*
The combined rate of diversion to storage and direct diversion from the Felton and Tait Street Diversion Facilities under Permits 16123 and 16601 shall not exceed 20 cubic feet per second.

*Change in Place of Use:*
To provide flexibility to integrate water resources in the regional area, the City seeks to expand its currently allowed place of use under its Permits and Licenses to include adjacent services areas of Central Water District, San Lorenzo Valley Water District, Scotts Valley Water District, Soquel Creek Water District, the Santa Cruz Mid-County Groundwater Basin (Basin No. 3-027) and Santa Margarita Groundwater Basin (Basin No 3-027), as well as the City's North Coast service area.

*Change in Purpose of Use:*
The City proposes to consolidate its purposes of use under its Permits 16123 and 16601, and Licenses 1553, 7200 and 9847 to include municipal, domestic, industrial, recreation, fire protection, and protection of groundwater quality to prevent seawater intrusion.

*Addition of Fishery Terms:*
The City proposes to add, to each of its existing water right Licenses and Permits, the minimum bypass flows that the City has negotiated with the National Marine Fisheries Service and the California Department of Fish & Wildlife. Attached are the agreed upon minimum flow conditions in the San Lorenzo River during the allowed diversion seasons at both the Tait Street and Felton Diversion facilities, and in Newell Creek at Loch Lomond Reservoir.

*Extension of Time:*
The City is also seeking Extension of Time for Permits 16123 and 16601 to request an additional 37 years in which to put the water to full beneficial use. The Permits expired on December 31, 2006, and additional time is required to meet future growth demands set forth in the City of Santa Cruz, Santa Cruz County, City of Scotts Valley and City of Capitola's general plans. The Petitions do not represent an increase in the amount of water allowed to be diverted.

*Environmental Document:*
As Lead Agency, the City of Santa Cruz is preparing an Environmental Impact Report (EIR) pursuant to the requirements of the California Environmental Quality Act (CEQA). The EIR will evaluate potential environmental impacts of the Proposed Project.

# City of Santa Cruz
# Photographs to Accompany Petitions

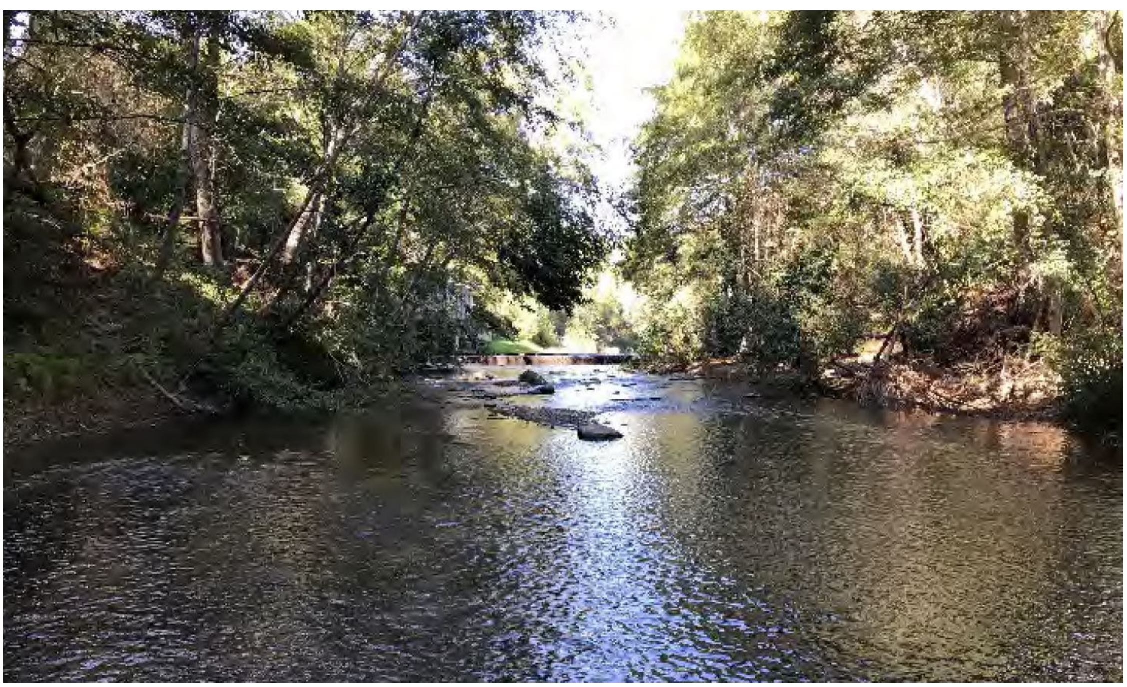
## Newell Creek & Loch Lomond Reservoir
## License 9847 (Application A017913)

## San Lorenzo River – Felton Diversion
## Permit 16123 (Application A022318)
## Permit 16601 (Application A023710)

## San Lorenzo River – Tait Street Diversion
## License 1553 (Application A004017)
## License 7200 (Application A005215)

FELTON DIVERSION FACILITY

MARCH 2009



FELTON DIVERSION FACILITY- LOOKING DOWNSTREAM

JANUARY 2019

FELTON DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

LOCH LOMOND LAKE- NEWELL DAM

JANUARY 2019

NEWELL CREEK- LOOKING DOWNSTREAM

FEBRUARY 2012

NEWELL CREEK- LOOKING UPSTREAM

AUGUST 2016

TAIT WELL 1B

JANUARY 2018

TAIT DIVERSION DAM

JANUARY 2019

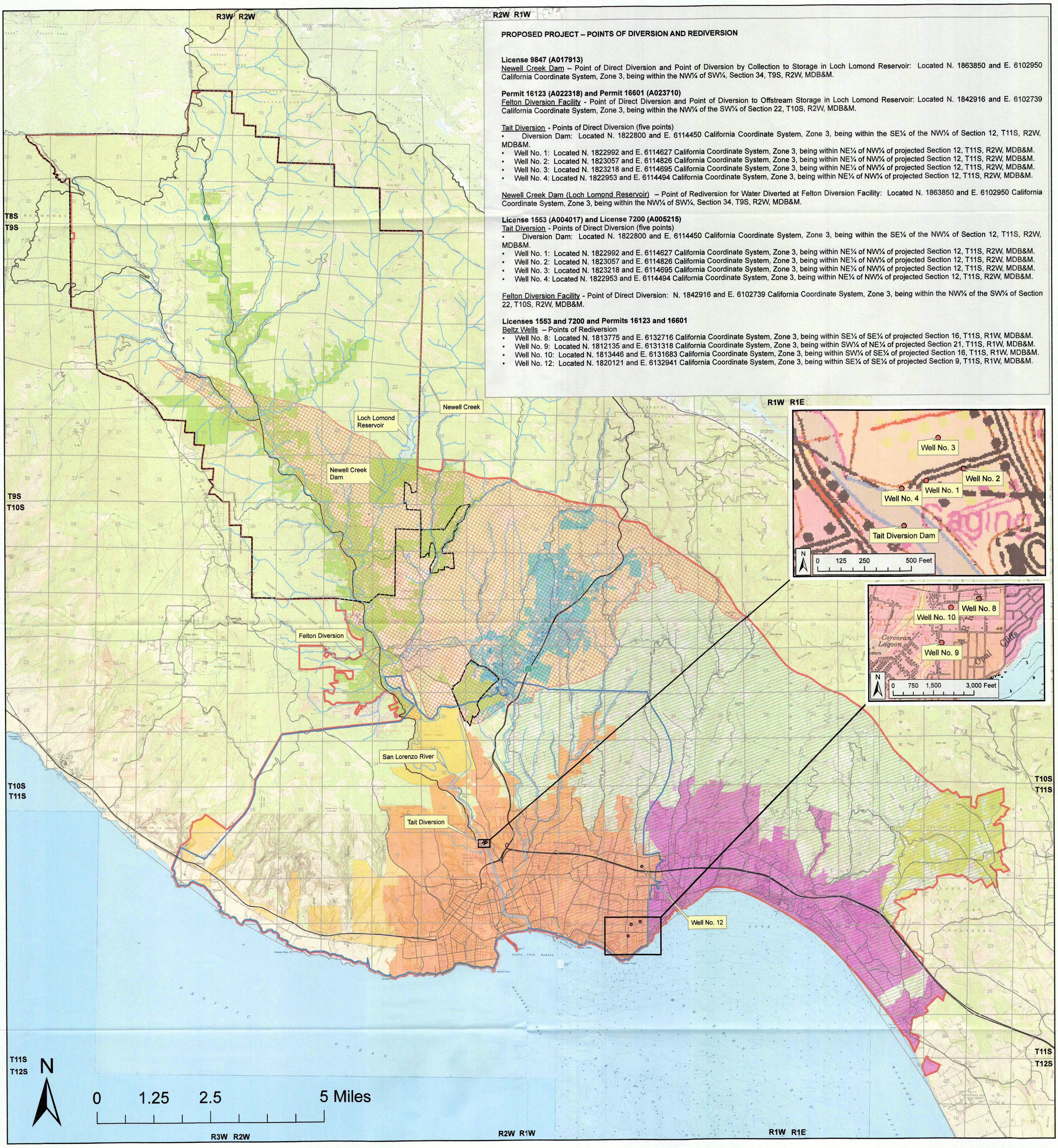
TAIT DIVERSION FACILITY – LOOKING DOWNSTREAM

JANUARY 2019

TAIT DIVERSION FACILITY- LOOKING UPSTREAM

JANUARY 2019

# MAP TO ACCOMPANY PETITIONS FOR CHANGE LICENSES 1553, 7200, 9847 (A004017, A005215, AND A017913, RESPECTIVELY) AND PERMITS 16123 AND 16601 (A022318 AND A023710, RESPECTIVELY) CITY OF SANTA CRUZ SANTA CRUZ COUNTY, CA




San Lorenzo River and Tributaries

State Highways

**Water Service Areas**

- Central Water District
- San Lorenzo Valley Water District
- Scotts Valley Water District
- Soquel Creek Water District
- City of Santa Cruz' Service Area
- City of Santa Cruz' North Coast Service Area

**Places of Use**

- License # 9847
- License #'s 1553, 7200; Permit #'s 16601, 16123
- Proposed Place of Use Expanded

**Groundwater Basins**

- Santa Cruz Mid-County
- Santa Margarita

**CERTIFICATE OF ENGINEER**

I, NICHOLAS F. BONSIGNORE OF 2151 RIVER PLAZA DR., SUITE 100, SACRAMENTO, CALIFORNIA, DO HEREBY CERTIFY THAT THIS MAP WAS PREPARED UNDER MY DIRECT SUPERVISION BASED U.S.G.S. 7.5-MINUTE QUADRANGLES FOR BIG BASIN, CASTLE ROCK RIDGE, DAVENPORT, FELTON, LAUREL, SANTA CRUZ, SOQUEL, AND WATSONVILLE WEST, FROM PUBLISHED SERVICE AREA MAPS FOR CENTRAL WATER DISTRICT, SAN LORENZO VALLEY WATER DISTRICT, SCOTTS VALLEY WATER DISTRICT, SOQUEL CREEK WATER DISTRICT, MAPS ON FILE WITH SANTA CRUZ WATER DEPARTMENT AND SANTA CRUZ WATER DEPARTMENT LIMITED, AND OTHER INFORMATION PROVIDED BY CITY OF SANTA CRUZ, AND THAT IT CORRECTLY REPRESENTS THE PROJECT DESCRIBED IN THE ACCOMPANYING PETITIONS, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

7/23/2020

NICHOLAS F. BONSIGNORE
R.C.E NO. 39422
EXPIRES 12-31-2021

DATE

# PROTEST LETTERS

INTENTIONALLY LEFT BLANK

David S. Kossack, Ph. D.
San Andreas Land Conservancy
P. O. Box 268
Davenport, CA 95017

March 11, 2021
dkossack@san-andreas-land-conservancy
831.419.8307

Jane Ling
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000 jane.ling@waterboards.ca.gov

Re: Protest, City of Santa Cruz:

Petitions for Change and Extension of Time: Permits 16123 and 16601 (Applications A022318 and A023710 respectively)

Petitions for Change: Licenses 1553, 7200 and 9847 (Applications A004017, A005215 and A017913 respectively)

Ms. Ling:

Thank you for this opportunity to protest the City of Santa Cruz's Petitions for Change and Extension of Time: Applications *et seq*. We are concerned about the very nature of the City's petition in terms of its failure to provide the information necessary for a reasonable person to grasp the breadth and depth of the petition, its growth inducing and cumulative impacts, and its deferral of necessary analysis to subsequent documents (e.g., project fragmentation and piecemeal development) as well as its dependence on expired permits and/or those that have not been perfected.

Petitions and their protests represent a CEQA document. As such, Petitions must include sufficient detail to enable those who did not participate in its preparation to understand and to meaningfully consider the issues raised by the proposed project. CEQA also need to include existing conditions, in this case including existing diversion rates for licensed water works, permit status and compare and contrast environmental protections in place at present and when the applications were submitted.

- The City needs to limit their discussion of flow rates and volume to a single set of units (e.g., cfs and/or acre-feet). To flip flop between different sets of units (e.g., gallons per minute, million gallons/year) is obfuscation, it frustrates the comparison of water use between permits, across uses as well as through time. This is information that any reasonable person needs to have in order to understand and meaningfully consider the scope and impacts of these Petitions.

- We are very concerned that request for Extension of Time represents an exercise of, "It's easier to get forgiveness than permission. The applications A022318 and A023710 were submitted in 1965 and 1971, respectively. Within their Time to Complete Beneficial Use, December 31, 2006, the City had more than 35 years, 41 and 35 years respectively, to complete beneficial use for either or both Applications. The amount put to beneficial use at the end of the Time to

Complete Beneficial Use becomes part the conditions of a License. These applications were never Licensed. In fact, if the diversion rates presented eWRIMS' "Progress Report by Permittee" are real there has not been any water put to beneficial use in either of these Applications/Permits. The applications can only be described as expired and abandoned. The cover letter provided by Ms. Whealen claims that the City filed Petitions for Change and Extension of Time for these Applications and associated Permits but no documentation is provided nor is a determination of those Petitions in the time immediately following 2006.

- The City presents the present petitions as if they wouldn't change the amount of water actually diverted. On the contrary with no water diverted under applications A022318 and A023710, ever, bringing these expired projects on-line to the Face Amount presented in eWRIMS would essentially double the amount of water that the City is presently diverting. Now the City wants to prop these expired Applications/Permits up in a corner, hang every water project they can think of on it and then leverage another Extension of Time: another 37 years. This request for extension is "over the horizon", it provides no mechanism to monitor the progress of the project or enforce the terms of any permit base on present day conditions and current code.

- The City is attempting to dodge environmental issues, including fish, wildlife and in-stream flows, that were not recognized or even codified when these Applications were submitted more than 35 years ago. It has been said before, If you don't have an amount put to beneficial use at the End of your Time to Complete Beneficial Use then you didn't have a project when you submitted your application in the first place. If the City has a need to double the amount of water diverted out of the San Lorenzo River, and other locations, then they should submit a *de novo* application… for public review.

- There is a reference to SGMA. These diversions to off-stream storage, either above ground or under-ground is pumped storage of surface water. These storage facilities and the water that they store can not be morphed into 'Ground Water.'

- In the driest month of the driest of dry years (Hydrologic Condition 5) the City's "Agreed Flows" for fish and in-stream fauna represent <2% of the threshold for Hydrologic Condition 5. The Felton Diversion has an Agreed Flow of <5% of the threshold for Hydrologic Condition 5
- No explanation is provided as to why the Taite Street Diversion, downstream of the Felton Diversion Point (A022318 and A023710) only requires 40% of the Felton Diversion Point Agreed Flows. There is no ecological basis for the number that the City throws out. These bypass flow rates are incapable of providing for the protection and recovery of protected species, including coho, steelhead but also green sturgeon and Pacific lampreys, and RLF. The Petitions provide no documentation of their claimed NMFS/CDFW permits or how the bypass flow rates were determined. The simplest explanation is that these determinations are based upon environmental requirements at the time the Applications were submitted, which in 1965 and 1971 did not exist. This represents deferred mitigation. By-pass flows need to be based upon February median flows under present conditions.

- The petitions fail to discuss either the meaning of proposed Direct Diversion from Newell Creek or discuss the impacts, in particular, what prevents the City from diverting additional water from Newell Creek itself.

- The restrictions offered by these Petitions (i.e., Attachment to Petitions for Change) are ineffective if not meaningless: proposed Terms and Conditions item 2 diversion under Hydrologic Condition 5 only apples to underground storage, it does not apply to diversion to above ground storage or direct diversion; item 3 limits delivery of water diverted to users other than the City of Santa Cruz Water Department under Hydrologic Condition 4 & 5 but with the City's Water Department: proposed changes to the place of use including to Soquel, Scotts Valley and the North Coast there really won't be any reduction in the rate of diversion.

- Why does the City require additional uses? These uses were present in 1971 and 1965 and all the way back to 1935. This is simply an attempt to push as much as possible on to the plate. These Petitions are an example of the 1st rule of negotiations: ask for the outrageous so that when you only get half of what you asked for you still get more than you planned on. This applies to the City's expansion of places of use as well, the octopus.

- The City is somewhat disingenuous in submitting their Petitions: "The City is well into the preparation of a draft environmental impact report. Therefore, we request that these revised Petitions be issued for public notice as soon as possible to incorporate and/or address comments in the environmental document." Is this a serious Petition or is it simply another attempt to stall the process, and the clock. The Petitions and Protests are a CEQA document. As such, putting off the presentation of necessary information and discussion of their impacts is project fragmentation, piecemeal development.

Measures that could be taken to resolve the protest:

- The City references claims pre-1914 water rights on the Santa Cruz County North Coast. The City needs to document the amount of water actually put to beneficial use, in 1914, under their claimed pre-1914 water rights. The City also needs to provide records of the amount of water put to beneficial use under their claimed pre-1914 water rights throughout the past 107 years.

- The City needs to carry out an IFIM for the San Lorenzo River -to address impacts of on-going and increased diversion.

- No mitigation is offered for this Petition Change/Extension of Time. A simple and effective mitigation that would help resolve at least some of the protest would be to put a Conservation Easement on the City/City Water Department's watershed properties, including Loch Lomond and the North Coast watersheds. The purpose of the CE would be to extinguish any and all timber rights and affect the restoration of a mature forest ecology on the City's watersheds. This will protect the City's waters by improving the quality of their watersheds and the City's need to protect their water supply would benefit the watershed by reducing or eliminating anthropogenic encroachment into the watershed. A win-win situation.

Thank you

David Kossack
On behalf of
San Andreas Land Conservancy

NOSSAMAN LLP

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Refer To File # 502665-0001

**VIA EMAIL AND CERTIFIED MAIL**



March 12, 2021

Jane Ling
Senior Water Resources Control Engineer
State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000
Email: jane.ling@waterboards.ca.gov

With a copy to:

Rosemary Menard
Water Director
City of Santa Cruz
212 Locust Street, Ste. A
Santa Cruz, CA 95060
Email: RMenard@cityofsantacruz.com

Re: **Notice of Petitions for Change and Time Extension for Water Rights Permits 16123 and 16601 and Petitions for Change for Licenses 1553, 7200 and 9847 (Notice of Petitions)**

Dear Ms. Ling:

In accordance with California Water Code sections 1703.1, 1703.2 and 1702,[1] and Code of Regulations Title 23, sections 745, 747 and 796, the San Lorenzo Valley Water District (District) respectfully submits these comments and the enclosed protest form (Enclosure A) in response to the above-referenced Notice of Petitions filed by the City of Santa Cruz (City).

The District is a public entity water supplier serving the communities of Boulder Creek, Brookdale, Ben Lomond, Zayante, Felton, Lompico, and portions of Scotts Valley. In order to serve these communities, the District holds pre- and post-1914 surface water rights within the San Lorenzo River (River) watershed and groundwater water rights in the Santa Margarita Groundwater Basin

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[1] Water Code section 1702 requires the petitioner seeking the change to establish that the proposed change "will not operate to the injury of any legal user of the water involved." *See also* Code of Regulations Title 23, section 791, subdivision (a).

(Basin).[2] The District also holds contractual rights to obtain water from the Loch Lomond Reservoir operated by the City.

The District prides itself on its track record of environmental stewardship within the San Lorenzo Valley and its watershed, and the District is committed to working with the State Water Resources Control Board (SWRCB), the City, and fish and wildlife protection agencies. The District has appreciated the open communication with you and other SWRCB staff, and the staff of the other resource agencies, in addressing many environmental and water supply challenges.

The District recognizes the importance of re-operating water systems (including the City's) to maximize the reasonable and beneficial use of limited water resources, especially in light of challenges posed by a changing climate and increasing risks of drought and wildfire. To this end the District has been actively working to enhance the ability to provide a safe, clean and reliable water supply to the public. Among other things, over the past decade, the District has constructed interties throughout its water system and in cooperation with neighbors to enhance water system resilience and reliability. Such improvements have been critical for continuing to provide water to the public following the recent CZU Wildfire emergency.

In collaboration with partner agencies including the County of Santa Cruz (County), among others, the District is presently engaged in developing a conjunctive use enhancement plan to improve water resource efficiency. The plan will provide guidance for diverting excess winter surface flow in the River's tributaries to meet water supply needs, rest groundwater wells, and provide for groundwater recharge within the Basin. The plan will facilitate the selection of optimal management alternatives including a list of recommended infrastructure upgrades. The plan is currently undergoing CEQA review, and it is anticipated to prompt water rights change petition filings by the District, likely to be forthcoming by the end of June this year.

Against this cooperative backdrop, the District has identified certain legal issues concerning some of the proposed conditions in the City's Petition. In short, the District's right to obtain water from Loch Lomond requires protection so that it can be used when it is most needed to deliver stored water to the public. Also, the public served by the District has an interest in ensuring that River bypass flow requirements established for the City's Petition are not ultimately imposed on upstream water rights in a manner that unreasonably interferes with the rights, or with conjunctive use. These concerns are explained in detail below.

**1. Loch Lomond Reservoir Allotment Requires Protection**

As stated above, the District has a contract with the City, pursuant to which the District holds the right to procure water at cost from the Loch Lomond Reservoir. This right constitutes a legally protected interest of the District under the "no injury" rule. *State Water Resources Control Board Cases* (2006) 136 Cal.App.4th 674, cert. denied 549 U.S. 889 (The "no injury" rule bars a change that would reduce deliveries to a party that contracts for water deliveries if the reduction would constitute a breach of contract.).

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[2] The District is one of the three member agencies of the groundwater sustainability agency formed to bring the Basin into compliance with the Sustainable Groundwater Management Act.

The District may call upon its Loch Lomond allotment at any time of year and any hydrologic condition under the terms of its Water Service Agreement with the City, dated September 26, 1962 (Agreement), a copy of which is enclosed (Enclosure B). The absence of any seasonal or hydrologic restriction is an important and material feature of the Agreement, because stored water is most likely to be needed by the District and the public when other sources of supply are restricted or unavailable.

The District's Loch Lomond right potentially is injured by the following proposed condition set forth in the Notice of Petitions as to Permits 16123, 16601 and License 9847:[3]

> "No delivery of water diverted under this right for use by a water supplier other than the City of Santa Cruz Water Department shall occur during Hydrologic Conditions 4 and 5, as defined in the Exceedance Category Limits Table (attached to the petition, available upon request)." Emphasis added.

The Notice of Petition as to License 9847 includes the following additional proposed condition that potentially injures the District's Loch Lomond right:

> "The City shall release water from the Loch Lomond Reservoir to Newell Creek according to the minimum streamflow schedule agreed by the City, NMFS, and CDFW (attached to the petition, available upon request)."

These proposed conditions, as presently stated, may be interpreted as impairments to the District's Loch Lomond allotment. The "no delivery" condition appears to prohibit the City from fulfilling calls by the District upon its Loch Lomond rights during dry conditions—the very time when the public need for stored water is greatest. The "release" condition could be interpreted to require the City to release water to Newell Creek that is needed to fulfill a call by the District upon its allotment. Such prohibitions would cause breach of contract and unreasonable injury to the District's rights and public water service.

To avoid this injury, the District respectfully requests that SWRCB impose an additional condition as to Permits 16123, 16601 and License 9847, as follows:

> "Nothing herein shall impair contract rights held pursuant to that certain Water Service Agreement between the City of Santa Cruz and the San Lorenzo Valley County Water District, dated September 26, 1962 (Agreement). The City shall be permitted to deliver water from the Loch Lomond Reservoir pursuant to the Agreement during any hydrologic condition and notwithstanding minimum streamflow schedules herein."

The District believes that this additional condition would adequately protect the District's Loch Lomond allotment for the benefit of the public, and thereby permit the District to withdraw its protest as to this issue.

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[3] Permits 16123 and 16601 allow the City to divert water from the River at Felton to offstream storage at Loch Lomond. License 9847 allows the City to divert water from a tributary of the River (Newell Creek) to storage at Loch Lomond. These Permits and the License collectively provide water rights necessary for the City to fill Loch Lomond Reservoir.

**2. New Bypass Flow Requirements for the River**

The District holds upstream water rights in the watershed above the City's Felton diversion and the Big Trees Gage. The District's water rights include, without limitation, Permits 20123 and licensed applications 5297, 5299, 8843, 8844, and 8845 affecting Fall Creek and other tributaries to the River. As described above, these water rights are currently being evaluated in connection with a conjunctive use planning effort in partnership with the County and other agencies. As part of the process, it is anticipated that change petitions will be forthcoming for the purpose of maximizing the reasonable and beneficial uses of the District's rights. Also, the District is preparing a Temporary Urgency Change Petition (TUCP) for change of place of use on a temporary basis during recovery from the recent CZU Wildfire emergency.

The District is concerned about new bypass flow requirements being established for the River. The new requirements are set forth as the following proposed condition to Permits 16123, 16601 (the permits allowing the City to divert from the River at Felton):

> "Petitioner shall bypass water at both the Felton and Tait Street Diversion Facilities according to the minimum streamflow schedule agreed by the City, the National Marine Fisheries Service (NMFS), and the California Department of Fish & Wildlife (CDFW) (attached to the petition, available upon request). …" Emphasis added.

The proposed minimum streamflow schedule attached to the Petitions, entitled "Agreed Flows for Felton Diversion on the San Lorenzo River, as Measured at the Big Trees Gage," would approximately *double* the required minimum streamflow in the River. According to the Notice of Petitions, under the City's existing Permit 16123, the minimum streamflow is 10 cfs during the month of September and "20 cfs … from October 1 through May 31." The City's existing Permit 16601 requires, "[f]or the protection of fish, … during the month of October … 25 cfs [and not] less than 20 cfs during the period November 1 to the succeeding May 31." Under the proposed new schedule, no diversion whatsoever would be allowed during the summer months of June, July and August, and the required minimum streamflow would be as high as 40 cfs for six of the remaining nine months (December through May) during conditions of fish spawning or adult migration.

The District's permitted water rights are subject to lower minimum streamflow requirements measured at the Big Trees Gage than those agreed to by the City. Were the new streamflow schedule imposed in connection with anticipated forthcoming change petitions to the District's water rights, as discussed above, it would impair significantly the District's ability to meet the needs of the public. Therefore, the District respectfully requests that SWRCB defer further consideration of the City's pending Petitions until the District submits its own petitions. Filing of the District's change petitions is anticipated upon completion of environmental review of the draft conjunctive use plan, likely by the end of June this year.

Alternatively, the District respectfully requests that SWRCB find good cause exists to extend the time allowed for the filing of protests or that it accept supplemental information,[4] so that the District may present information pertaining to the exercise of smaller upstream water rights and fisheries protection, and how best to conserve the public interest.

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[4] Code of Regulations, Title 23, Sections 747, 748, 753, and 843, subdivision (c).

In furtherance of cooperation among the affected agencies, the District provided a draft of this letter and discussed it with representatives of the City prior to its submission. Based on that conversation, the District is optimistic that prompt resolution of its protest regarding the Loch Lomond allotment is possible. Also, the District is committed to seeking a prompt cooperative resolution of the more complicated issue of how new bypass flows and minimum streamflows may affect smaller upstream water users.

The District welcomes the opportunity to discuss these issues with SWRCB and the City, and to provide further information as SWRCB may require.

Respectfully submitted,

NOSSAMAN LLP

By ______________________
Gina R. Nicholls
District Counsel
San Lorenzo Valley Water District

cc: Rick Rogers, District Manager, San Lorenzo Valley Water District

Enclosures:

Enclosure A – Protest Petition Form
Enclosure B – Loch Lomond Water Service Agreement, dated September 26, 1962

# Enclosure A

State of California
State Water Resources Control Board

# DIVISION OF WATER RIGHTS

## P.O. Box 2000, Sacramento, CA 95812-2000

Info: (916) 341-5300, FAX: (916) 341-5400, Web: http://www.waterboards.ca.gov/waterrights

# PROTEST– PETITION

**This form may also be used for objections**

**PETITION FOR TIME EXTENSION, CHANGE, TEMPORARY URGENT CHANGE OR TRANSFER ON**

**APPLICATION** 22318, 23710, 4017, 5215, 17912 **PERMIT** 16123, 16601 **LICENSE** 1553, 7200, 9847

**OF** City of Santa Cruz

I (We) have carefully read the notice (state name): Rick Rogers, District Manager, San Lorenzo Valley Water District ("SLVWD" or "District"); Gina Nicholls, District Counsel

Address, email address and phone number of protestant or authorized agent: Gina Nicholls, Nossaman LLP, 777 South Figueroa Street, 34th Floor, Los Angeles, CA, 90017; gnicholls@nossaman.com; 213-612-7815

Attach supplemental sheets as needed. To simplify this form, all references herein are to protests and protestants although the form may be used to file comments on temporary urgent changes and transfers.

**Protest based on ENVIRONMENTAL OR PUBLIC INTEREST CONSIDERATIONS (Prior right protests should be completed in the section below):**

- the proposed action will not be within the State Water Resources Control Board's jurisdiction ☐
- not best serve the public interest ☒
- be contrary to law ☒
- have an adverse environmental impact ☐

State facts which support the foregoing allegations SLVWD has a contract with the City of Santa Cruz ("City"), pursuant to which the District holds the right to procure water at cost from the Loch Lomond Reservoir. Additionally, the District holds upstream water rights in the watershed above the City's Felton diversion and the Big Trees Gage. The proposed conditions would impair significantly the District's ability to meet the needs of the public by restricting the District's ability to procure water from Loch Lomond and divert upstream of the City's Felton diversion and the Big Trees Gage. See letter enclosed herewith for further discussion of facts supporting this protest.

Under what conditions may this protest be disregarded and dismissed? (Conditions should be of a nature that the petitioner can address and may include mitigation measures.)

See letter enclosed herewith for explanation of conditions under which this protest may be disregarded and dismissed.

**Protest based on INJURY TO PRIOR RIGHTS:**

To the best of my (our) information and belief the proposed change or transfer will result in injury as follows: ____________________

Protestant claims a right to the use of water from the source from which petitioner is diverting, or proposes to divert, which right is based on (identify type of right protestant claims, such as permit, license, pre-1914 appropriative or riparian right):: ____________________

List permit or license or statement of diversion and use numbers, which cover your use of water (if adjudicated right, list decree).

____________________

Where is your diversion point located?__¼ of ____ ¼ of Section ______, T ____, R____, ____B&M

If new point of diversion is being requested, is your point of diversion downstream from petitioner's proposed point of diversion? ____________________

The extent of present and past use of water by protestant or his predecessors in interest is as follows:

a. Source ____________________
b. Approximate date first use made____________________
c. Amount used (list units)____________________
d. Diversion season____________________
e. Purpose(s) of use____________________

Under what conditions may this protest be disregarded and dismissed? ____________________

**All protests must be signed by the protestant or authorized representative:**

Signed: ____________________ Date: March 12, 2021

**All protests must be served on the petitioner**. Provide the date served and method of service used:

March 12, 2021, email and mail

# Enclosure B

WATER SERVICE AGREEMENT
CITY OF SANTA CRUZ WITH
SAN LORENZO VALLEY COUNTY
WATER DISTRICT

THIS AGREEMENT made in the County of Santa Cruz, State of California, on the date hereinafter specified, by and between the CITY OF SANTA CRUZ, a municipal corporation, hereinafter called SELLER and the SAN LORENZO VALLEY COUNTY WATER DISTRICT, a political subdivision of the State of California, hereinafter called PURCHASER,

WITNESSETH:

By way of recital SELLER and PURCHASER acknowledge:

(a) As a condition to the sale by PURCHASER to SELLER of real properties presently utilized for the Newell Creek Dam and Newell Creek Dam Water Shed it was covenanted and agreed by and between SELLER and PURCHASER that SELLER, upon demand of PURCHASER, would sell up to 500 acre feet of water per year to PURCHASER at a price to be determined by SELLER as the actual cost of production and transmission of said water along SELLER'S Newell Creek pipeline to the point of diversion of PURCHASER.

(b) That PURCHASER desires to acquire water from SELLER pursuant to said contract and the following is a memorial setting forth the terms thereof.

NOW, THEREFORE, IN ACCORDANCE WITH THE FOREGOING TERMS AND CONDITIONS, SELLER agrees to sell and PURCHASER agrees to buy water from SELLER at PURCHASER'S point of diversion from said Newell Creek pipeline in amount not to exceed 500 acre feet per year as PURCHASER may require at the actual cost of production and transmission thereof by SELLER.

PURCHASER agrees to pay currently, during each year of this agreement, the sum of ten cents ($0.10) per hundred cubic feet of water delivered by SELLER to PURCHASER subject to audit and adjustment at the close of each year of this agreement upon the determination of the actual cost of production and transmission thereof to PURCHASER'S diversion and PURCHASER agrees to pay such additional charge as may be and SELLER agrees to remit or

# CITY RESPONSE TO PROTEST LETTERS

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**BARTKIEWICZ, KRONICK & SHANAHAN**

RICHARD P. SHANAHAN
RYAN S. BEZERRA
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*Retired*
PAUL M. BARTKIEWICZ
STEPHEN A. KRONICK

May 16, 2021

David S. Kossack, Ph. D.
San Andreas Land Conservancy
P.O. Box 268
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VIA E-MAIL AND U.S. MAIL
dkossack@san-andreas-land-conservancy.org
dkossack@cruzio.com

Re: City of Santa Cruz's Petitions for Change and Extension of Time – Response to San Andreas Land Conservancy Letter

Dear Dr. Kossack:

This letter is the City of Santa Cruz's response to the San Andreas Land Conservancy's (SALC) above-referenced March 11, 2021 letter that SALC submitted to the State Water Resources Control Board (SWRCB) as a protest of the City's pending water-right petitions. The City has carefully analyzed each of the issues raised in SALC's letter and appreciates your attention to the City's petitions. For convenience, this letter responds to each of the issues stated in SALC's letter in the order that the letter presented them. In summary, none of those issues presents a valid ground for a protest of the City's water-right petitions. Under Water Code section 1703.6, the City therefore will request that the State Water Resources Control Board (SWRCB) ask you to submit any further information that you may have to support SALC's letter. A copy of section 1703.6 is enclosed.

*Response to Stated Grounds for Water-Right Protest*

SALC's March 11 letter assert a number of grounds as the basis for a protest of the City's water-right petitions, none of which are valid.

The second paragraph of SALC's letter incorrectly asserts that "[p]etitions and their protests represent a CEQA document" and that certain requirements therefore follow. Nevertheless, as SALC may or may not be aware, the City publicly circulated a Notice of Preparation (NOP) of an environmental impact report (EIR) for its water-right petitions and related actions in November 2018. (A copy of the NOP is enclosed for your ease of reference.) The City received no comments from SALC on the NOP. The City anticipates circulating its draft EIR for public review and comment in the spring or early summer of 2021. The City anticipates that this information resolves SALC's concern.

The 1st bulleted paragraph of SALC's letter concerns the units of water volume and flow used in the City's water-right petitions. SALC's comments on these points do not identify any grounds of injury to legal users, the public interest or environmental resources, as is required for a protest. Moreover, tables of conversions for units of water are readily available to the public through a web browser such as Google and from public entities such as the SWRCB and the federal Bureau of Reclamation. For your convenience, please find enclosed a math reference sheet produced by the American Waterworks Association, which states conversions for many of the unit measures used in the City's petitions.

The 2nd bulleted paragraph of SALC's letter concerns the timing of the City's petition for an extension of time for its water-right Permits 16123 and 16601. The comments in that paragraph only contest the basic legality of an extension of time. California law authorizes such extensions and states that a municipality's rights to "the use of water should be protected to the fullest extent necessary for existing and future uses" and extensions of time on cities' water-right permits often are granted. (See Water Code §§ 106.5, 1398.) In addition, one key reason why the City has not maximized beneficial use under Permits 16123 and 16601 is the success of its conservation programs. Water conservation is a beneficial use of an appropriative water right. (See Water Code § 1011.) The City's petitions demonstrate sufficient good cause for granting an extension of time, so SALC's legal arguments on this point do not support a protest of a water-right petition.

The 3rd bulleted paragraph of SALC's letter states that the extension petitions, if approved, will result in a "doubling" of the City's total diversions, but that assertion is inaccurate and misplaced. California law enables and supports cities in seeking additional time to maximize use under existing water-right permits. The fact that an extension petition would enable more than current levels of use, as otherwise authorized by an existing permit, is therefore not a valid ground for a protest. The paragraph also contradicts itself by referencing information in the SWRCB's eWRIMS water-right reporting system and then arguing that there is "no mechanism to monitor the progress of the project or enforce the terms of the permit . . . ." Since its initiation, the eWRIMS system has provided such a mechanism.[1] Simply put, the City has met the statutory and regulatory requirements for an extension of time, including, but not limited to, by evidencing the beneficial use of water through conservation programs.

The 4th bulleted paragraph of SALC's letter states that the City's petitions are an effort to "dodge environmental issues" that "were not recognized or codified" when the City originally submitted its water-right applications and that the City therefore should have to "submit a *de novo* application . . . for public review." As discussed above, however, California law authorizes extensions of times, particularly for cities and particularly where conservation has reduced demands. The City's pending petitions also explicitly include new proposed streamflow requirements. The California Department of Fish and Wildlife (CDFW) has accordingly communicated its support for the City's petitions to the SWRCB. (A copy of CDFW's memorandum is enclosed.) Further, the City will circulate an EIR for public review, as the 2018 NOP indicated. Finally, as demonstrated by SALC's letter itself, the City provided public notice of its pending petitions through the SWRCB's notice.

The 5th bulleted paragraph of SALC's letter refers to the Sustainable Groundwater Management Act and states that surface water that the City proposes to store underground "can not be morphed into 'Ground Water.'" The City agrees, but this paragraph of SALC's letter does not support a water-right protest. As required by the applicable regulations, the City's pending water-right petitions include underground storage supplements to

[1] Because of the success of the City's water conservation program, the City's maximum use under Permits 16123 and 16601 to date occurred before eWRIMS system's implementation, as demonstrated by the City's permittee progress reports on file with the SWRCB.

demonstrate how surface water that the City diverts will be stored underground. Those supplements demonstrate how the surface water the City diverts under its water-right permits and licenses will be rediverted into and out of groundwater storage.

The 6th bulleted paragraph of SALC's letter appears to compare the instantaneous minimum flow rates proposed by the City's petitions with the accumulated flow volumes that those petitions use to calculate the minimum instantaneous rate. The paragraph makes no argument concerning the City's petitions based on these factual statements. To the extent that the paragraph suggests that the petitions' proposed minimum instantaneous flow rates are inadequate, the paragraph appears to inaccurately confuse instantaneous flows with accumulated flows.

The 7th bulleted paragraph of SALC's letter questions the technical basis for the proposed minimum flows stated in the City's petitions, specifically the proposed minimums for the City's Tait diversion, and argues that the City's proposals constitute "deferred mitigation." The paragraph provides no technical or factual support for this claim. The City developed the proposed minimum flows through a lengthy technical process with the National Marine Fisheries Service (NMFS) and CDFW, which has submitted a memorandum to the SWRCB in support of the City's petitions.

The 8th bulleted paragraph of SALC's letter states that the City's petitions do not "discuss the meaning" of the proposed direct diversion from Newell Creek or "what prevents the City from diverting additional water from Newell Creek itself." The City's allowable diversions from Newell Creek, however, are defined and limited by water-right License No. 9847. By their nature, the City's water-right petitions do not seek to authorize increased diversions from Newell Creek because they only seek changes within the scope of License No. 9847. The SWRCB previously discussed the nature of direct diversion and storage in relation to the City's permits and licenses in its Order WR 2009-0061. A copy of that order is enclosed for ease of reference.

The 9th bulleted paragraph of SALC's letter argues that the City's petitions "are ineffective if not meaningless" because, under them, limits on certain proposed operations by the City would occur only in Hydrologic Conditions 4 and 5. The City's petitions, however, propose new minimum flow requirements that would apply at all times. The comment mistakenly assumes that the proposed limits on certain operations in certain conditions are the only applicable limitations on the City's various diversions.

The 10th bulleted paragraph of SALC's letter is unclear, but suggests that there is no basis for the City to propose to add beneficial uses, and places of use, to its permits and licenses. This paragraph consists only of argument without a factual basis for a protest. The City's petitions are consistent with state policy, enacted in the 21th century, to improve integrated regional water planning and management. For example, in 2008, the Legislature enacted Water Code section 10531, which states, among other things, "It is the intent of the Legislature to encourage local agencies to work cooperatively to manage their available local and imported water supplies to improve the quality, quantity, and reliability of those supplies." The City's water-right petitions, if approved, will advance this policy.

The 11th bulleted paragraph of SALC's letter claims again that the City's petitions are "a CEQA document," that the City is "putting off the presentation of necessary information" and that the City's approach in submitting the petitions "is project fragmentation, piecemeal development." As discussed above, however, the City publicly circulated an NOP for the petitions, and related actions, in 2018 and soon will circulate a draft EIR for public review and comment.

*Response to Proposed Protest Resolution Terms*

SALC's letter states a number of proposed terms for resolution of SALC's protest. The City responds to those proposals as follows:

The 12th bulleted paragraph of SALC's letter states that the City needs to document its water use under its pre-1914 rights. The City has filed, with the SWRCB, statements of diversion and use for those rights for many years, so the City is already implementing this proposed term.

The 13th bulleted paragraph of SALC's letter states, in full, "The City needs to carry out an IFIM for the San Lorenzo River to address impacts of on-going and increased diversion." The City, however, has conducted a more thorough analysis of not only the San Lorenzo River, but also the North Coast streams, in cooperation with NMFS and CDFW. This analysis is the basis for the City's proposed minimum flows. CDFW has submitted, to the SWRCB, the enclosed memorandum supporting the City's petitions. In preparing the petitions, the City already has gone beyond the analysis the proposed term requests.

The 14th bulleted paragraph in SALC's letter states that imposing a conservation easement on lands that the City owns in the "Loch Lomond" and North Coast watersheds would be mitigation for the City's water-right petitions because it would extinguish any "timber rights" the City holds in those watersheds and would help to restore "mature forest ecology." The proposed term bears no relationship to the City's proposed water-right changes and extensions, which concern only water diversions. There is no basis for the proposed term as a condition of approval on the City's pending water-right petitions.

*Conclusion*

The City appreciates your attention to its water-right petitions. As demonstrated by its NOP for its forthcoming EIR, the City values public input on this project. As discussed above, however, SALC's March 11, 2021 letter does not state valid grounds for a water-right protest. The City therefore anticipates requesting that, after it circulates that draft EIR, it will ask the SWRCB to request that SALC provide any further information that it has to support its March 11 letter pursuant to Water Code section 1703.6. If SALC then has no further information to support its protest, the City anticipates that it will request that the SWRCB cancel that protest.

Kind regards,

Ryan S. Bezerra

Attorneys for the City of Santa Cruz

RSB:
Response to SALC water-right protest 2021-05-06
Cc (via e-mail, w/encl.): State Water Resources Control Board,
Division of Water Rights
Attn: Jane Ling,
P.O. Box 2000
Sacramento, CA, 95812-2000
Jane.Ling@waterboards.ca.gov

**State of California**

**WATER CODE**

**Section 1703.6**

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1703.6. (a) The board may cancel a protest or petition for failure to provide information requested by the board under this chapter within the period provided.

(b) Except as provided in subdivisions (c) and (d), the board shall not cancel a protest for failure to submit information not in the possession or under the control of the protestant if the protest meets the requirements of Section 1703.2 and the petitioner is or could be required to submit the information under Section 1701.1, 1701.2, or 1701.3.

(c) If a protest is based on injury to a legal user of water, the board may cancel the protest if the protestant fails to submit any of the following information requested by the board:

(1) Information that the protestant is required to submit to the board to comply with Part 5.1 (commencing with Section 5100) during any period after the protest is filed.

(2) Information that is reasonably necessary to determine if the protestant is a legal user of water.

(3) Information concerning the protestant's historical, current, or proposed future diversion and use of water that is reasonably necessary to determine if the proposed change will result in injury to the protestant's exercise of its water right or other legal use of water.

(d) If the protest is based on an allegation other than injury to a legal user of water, the board may cancel the protest for failure to submit information requested by the board if the board determines both of the following:

(1) The public review period has expired for any draft environmental document or negative declaration required to be circulated for public review and comment pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.

(2) In the absence of the requested information, there is no substantial evidence in light of the whole record to support the allegation.

(e) If a protest is subject to both subdivisions (c) and (d), the part of the protest subject to subdivision (c) may be canceled pursuant to subdivision (c) and the part of the protest subject to subdivision (d) may be canceled pursuant to subdivision (d).

(Amended by Stats. 2010, Ch. 288, Sec. 16. (SB 1169) Effective January 1, 2011.)

*The City provided a copy of the Notice of Preparation (NOP) and Initial Study (IS). See Appendix A for the NOP and IS.*

# WATER TREATMENT AND DISTRIBUTION OPERATOR MATH REFERENCE SHEET

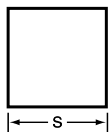
## Frequently used formulas and conversions

## KEY FORMULAS FOR MATH

### Area Formulas

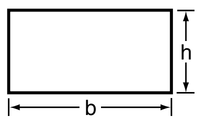
**Square**

area = $s \times s$
diagonal = $1.414 \times s$



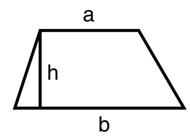

**Rectangle or Parallelogram**

area = $b \times h$
diagonal = square root $(b^2 + h^2)$



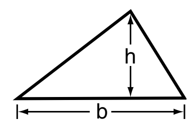

**Trapezoid**

$$\text{area} = \frac{(a+b)\,h}{2}$$



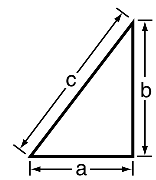

**Any Triangle**

$$\text{area} = \frac{b \times h}{2}$$



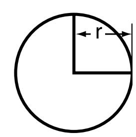

**Right-Angle Triangle**

$a^2 + b^2 = c^2$




**Circle**

area = $\pi \times r^2$
circumference = $2 \times \pi \times r$



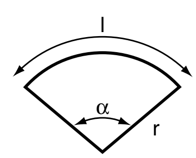

**Sector of a Circle**

$$\text{area} = \frac{\pi \times r \times r \times \alpha}{360}$$

length = $0.01745 \times r \times \alpha$

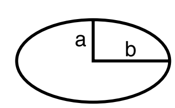
$$\text{angle} = \frac{1}{0.01745 \times r}$$

$$\text{radius} = \frac{1}{0.01745 \times \alpha}$$




**Ellipse**

area = $\pi \times a \times b$




### Base SI Units

| Quantity | Unit | Abbreviation |
|---|---|---|
| length | meter | m |
| mass | kilogram | kg |
| time | second | sec |
| electric current | ampere | A |
| thermodynamic temperature | kelvin | K |
| amount of substance | mole | mol |
| luminous intensity | candela | cd |

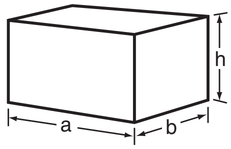
# WATER TREATMENT AND DISTRIBUTION OPERATOR MATH REFERENCE SHEET

## Volume Formulas

### Rectangular Solid

volume = $h \times a \times b$

surface area = $(2 \times a \times b) + (2 \times b \times h) + (2 \times a \times b)$

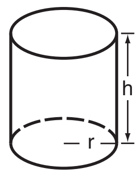



### Cylinder

volume = $\pi \times r^2 \times h$

surface area = $2 \times \pi \times rh$

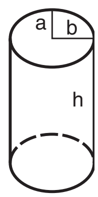
$\pi = 3.142$




### Elliptical Cylinder

volume = $\pi \times a \times b \times h$

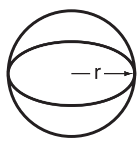
area = $6.283 \times \frac{\sqrt{a^2 + b^2}}{2} \times h + 6.283 \times a \times b$




### Sphere

volume = $\frac{4 \times \pi \times r^3}{3}$

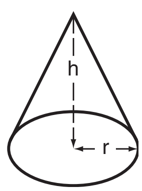
surface area = $4 \times \pi \times r^2$




### Cone

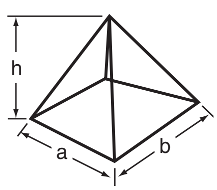
volume = $\frac{\pi \times r^2 \times h}{3}$

surface area = $\pi \times r \times \sqrt{r^2} \times (r + h) \times h$




### Pyramid

volume = $\frac{a \times b \times h}{3}$




## Other Formulas

theoretical water horsepower $= \frac{\text{gal/min} \times \text{total head, ft}}{3{,}960}$

$= \frac{\text{gal/min} \times \text{lb/in.}}{1{,}715}$

brake horsepower $= \frac{\text{theoretical water horsepower}}{\text{pump efficiency}}$

detention time, min $= \frac{\text{volume of basin, gal}}{\text{flow rate, gpm}}$

filter backwash rate, gal/min/ft$^2$ $= \frac{\text{flow, gpm}}{\text{area of filter, ft}^2}$

surface overflow rate $= \frac{\text{flow, gpm}}{\text{area, ft}^2}$

weir overflow rate $= \frac{\text{flow, gpm}}{\text{weir length, ft}}$

pounds per mil gal = parts per million $\times$ 8.34

parts per million = pounds per mil gal $\times$ 0.12

parts per million = percent strength of solution $\times$ 10,000

pounds per day = volume, mgd $\times$ dosage, mg/L $\times$ 8.34 lb/gal

dosage, mg/L $= \frac{\text{feed, lb/day}}{\text{volume, mgd} \times 8.34\ \text{lb/gal}}$

rectangular basin volume, ft$^3$ = length, ft $\times$ width, ft $\times$ height, ft

rectangular basin volume, gal = length, ft $\times$ width, ft $\times$ height, ft $\times$ 7.48 gal/ft$^3$

right cylinder volume, ft$^3$ = 0.785 $\times$ diameter$^2$, ft $\times$ height or depth, ft

right cylinder volume, gal = 0.785 $\times$ diameter$^2$, ft $\times$ height or depth, ft $\times$ 7.48 gal/ft$^3$

gallons per capita per day, average water usage $= \frac{\text{volume, gpd}}{\text{population served/day}}$

supply, days (full to tank dry) $= \frac{\text{volume, gpd}}{\text{population served} \times \text{gpcd}}$

gallons per day of water consumption, (demand/day) = population $\times$ gpcd

## Consumption Averages, per capita

winter = 170 gpcd
spring = 225 gpcd
summer = 325 gpcd

American Water Works Association

# CONVERSION OF US CUSTOMARY UNITS

## Linear Measurement

| | | | |
|---|---|---|---|
| fathoms | × 6 | = | feet (ft) |
| feet (ft) | × 12 | = | inches (in.) |
| inches (in.) | × 0.0833 | = | feet (ft) |
| miles (mi) | × 5,280 | = | feet (ft) |
| yards (yd) | × 3 | = | feet (ft) |
| yards (yd) | × 36 | = | inches (in.) |

## Circular Measurement

| | | | |
|---|---|---|---|
| degrees (angle) | × 60 | = | minutes (angle) |
| degrees (angle) | × 0.01745 | = | radians |

## Area Measurement

| | | | |
|---|---|---|---|
| acres | × 43,560 | = | square feet ($ft^2$) |
| square feet ($ft^2$) | × 144 | = | square inches ($in.^2$) |
| square inches ($in.^2$) | × 0.00695 | = | square feet ($ft^2$) |
| square miles ($mi^2$) | × 640 | = | acres |
| square miles ($mi^2$) | × 27,880,000 | = | square feet ($ft^2$) |
| square miles ($mi^2$) | × 3,098,000 | = | square yards ($yd^2$) |
| square yards ($yd^2$) | × 9 | = | square feet ($ft^2$) |

## Volume Measurement

| | | | |
|---|---|---|---|
| acre-feet (acre-ft) | × 43,560 | = | cubic feet ($ft^3$) |
| acre-feet (acre-ft) | × 325,851 | = | gallons (gal) |
| barrels (bbl) | × 42 | = | gallons (gal) |
| board foot (fbm) | | = | 144 square inches × 1 inch |
| cubic feet ($ft^3$) | × 1,728 | = | cubic inches ($in.^3$) |
| cubic feet ($ft^3$) | × 7.48052 | = | gallons (gal) |
| cubic feet ($ft^3$) | × 29.92 | = | quarts (qt) |
| cubic feet ($ft^3$) | × 59.84 | = | pints (pt) |
| cubic feet ($ft^3$) | × 0.000023 | = | acre feet (acre-ft) |
| cubic inches ($in.^3$) | × 0.00433 | = | gallons (gal) |
| cubic inches ($in.^3$) | × 0.00058 | = | cubic feet ($ft^3$) |
| drops | × 60 | = | teaspoons (tsp) |
| gallons (gal) | × 0.1337 | = | cubic feet ($ft^3$) |
| gallons (gal) | × 231 | = | cubic inches ($in.^3$) |
| gallons (gal) | × 0.0238 | = | barrels (bbl) |
| gallons (gal) | × 4 | = | quarts (qt) |
| gallons (gal) | × 8 | = | pints (pt) |
| gallons, US | × 0.83267 | = | gallons, Imperial |
| gallons (gal) | × 0.00000308 | = | acre-feet (acre-ft) |

| | | |
|---|---|---|
| gallons (gal) | × 128 | = ounces (oz) |
| gallons (gal) | × 0.0238 | = barrels (42 gal) (bbl) |
| gallons, Imperial | × 1.20095 | = gallons, US |
| pints (pt) | × 2 | = quarts (qt) |
| quarts (qt) | × 4 | = gallons (gal) |
| quarts (qt) | × 57.75 | = cubic inches ($in.^3$) |

## Pressure Measurement

| | | |
|---|---|---|
| atmospheres | × 29.92 | = inches of mercury |
| atmospheres | × 33.90 | = feet of water |
| atmospheres | × 14.70 | = pounds per square inch ($lb/in.^2$) |
| feet of water | × 0.8826 | = inches of mercury |
| feet of water | × 0.02950 | = atmospheres |
| feet of water | × 0.4335 | = pounds per square inch ($lb/in.^2$) |
| feet of water | × 62.43 | = pounds per square foot ($lb/ft^2$) |
| feet of water | × 0.8876 | = inches of mercury |
| inches of mercury | × 1.133 | = feet of water |
| inches of mercury | × 0.03342 | = atmospheres |
| inches of mercury | × 0.4912 | = pounds per square inch ($lb/in.^2$) |
| inches of water | × 0.002458 | = atmospheres |
| inches of water | × 0.07355 | = inches of mercury |
| inches of water | × 0.03613 | = pounds per square inch ($lb/in.^2$) |
| pounds/square in. ($lb/in.^2$) | × 0.01602 | = feet of water |
| pounds/square foot ($lb/ft^2$) | × 6,954 | = pounds per square inch ($lb/in.^2$) |
| pounds/square in. ($lb/in.^2$) | × 2.307 | = feet of water |
| pounds/square inch ($lb/in.^2$) | × 2.036 | = inches of mercury |
| pounds/square inch ($lb/in.^2$) | × 27.70 | = inches of water |
| feet suction lift of water | × 0.882 | = inches of mercury |

## Weight Measurement

| | | |
|---|---|---|
| cubic feet of ice | × 57.2 | = pounds (lb) |
| cubic feet of water (50°F) | × 62.4 | = pounds of water |
| cubic inches of water | × 0.036 | = pounds of water |
| gallons water (50°F) | × 8.3453 | = pounds of water |
| milligrams/liter (mg/L) | × 0.0584 | = grains per gallon (US) (gpg) |
| milligrams/liter (mg/L) | × 0.07016 | = grains per gallon (Imp) |
| milligrams/liter (mg/L) | × 8.345 | = pounds per million gallons (lb/mil gal) |
| ounces (oz) | × 437.5 | = grains (gr) |
| parts per million (ppm) | × | = milligrams per liter (mg/L) (for normal water applications) |
| grains per gallon (gpg) | × 17.118 | = parts per million (ppm) |

| | | |
|---|---|---|
| grains per gallon (gpg) | × 142.86 | = pounds per million gallons (lb/mil gal) |
| percent solution | × 10,000 | = milligrams per liter (mg/L) |
| pounds (lb) | × 16 | = ounces (oz) |
| pounds (lb) | × 7,000 | = grains (gr) |
| pounds (lb) | × 0.0004114 | = tons (short) |
| pounds/cubic inch (lb/in.$^3$) | × 1,728 | = pounds per cubic foot (lb/ft$^3$) |
| pounds of water | × 0.0166032 | = cubic feet (ft$^3$) |
| pounds of water | × 2,768 | = cubic inches (in.$^3$) |
| pounds of water | × 0.1198 | = gallons (gal) |
| tons (short) | × 2,000 | = pounds (lb) |
| tons (short) | × 0.89287 | = tons (long) |
| tons (long) | × 2,240 | = pounds (lb) |
| cubic feet air (@ 60°F and 29.92 in. mercury) | × 0.0763 | = pounds (lb) |

## Flow Measurement

| | | |
|---|---|---|
| barrels per hour (bbl/hr) | × 0.70 | = gallons per minute (gpm) |
| acre-feet/minute | × 325.851 | = gallons per minute (gpm) |
| acre-feet/minute | × 726 | = cubic feet per second (ft$^3$/sec) |
| cubic feet/minute (ft$^3$/min) | × 0.1247 | = gallons per second (gps) |
| cubic feet/minute (ft$^3$/min) | × 62.43 | = pounds of water per minute |
| cubic feet/second (ft$^3$/sec) | × 448.831 | = gallons per minute (gpm) |
| cubic feet/second (ft$^3$/sec) | × 0.646317 | = million gallons per day (mgd) |
| cubic feet/second (ft$^3$/sec) | × 1.984 | = acre-feet per day (acre-ft/day) |
| gallons/minute (gpm) | × 1,440 | = gallons per day (gpd) |
| gallons/minute (gpm) | × 0.00144 | = million gallons per day (mgd) |
| gallons/minute (gpm) | × 0.00223 | = cubic feet per second (ft$^3$/sec) |
| gallons/minute (gpm) | × 0.1337 | = cubic feet per minute (ft$^3$/min) |
| gallons/minute (gpm) | × 8.0208 | = cubic feet per hour (ft$^3$/hr) |
| gallons/minute (gpm | × 0.00442 | = acre-feet per day (acre-ft/day) |
| gallons/minute (gpm) | × 1.43 | = barrels (42 gal) per day (bbl/day) |
| gallons water/minute | × 6.0086 | = tons of water per 24 hours |
| million gallons/day (mgd) | × 1.54723 | = cubic feet per second (ft$^3$/sec) |
| million gallons/day (mgd) | × 92.82 | = cubic feet per minute (ft$^3$/min) |
| million gallons/day (mgd) | × 694.4 | = gallons per minute (gpm) |
| million gallons/day (mgd) | × 3.07 | = acre-feet per day (acre-ft/day) |
| pounds of water/minute | × 26.700 | = cubic feet per second (ft$^3$/sec) |
| miner's inch | | = flow through an orifice of 1 in.$^2$ under a head of 4 to 6 in. |
| miner's inches (9 gpm) | × 8.98 | = gallons per minute (gpm) |

| | | |
|---|---|---|
| miner's inches (9 gpm) | × 1.2 | = cubic feet per minute ($ft^3$/min) |
| miner's inches (11.25 gpm) | × 11.22 | = gallons per minute (gpm) |
| miner's inches (11.25 gpm) | × 1.5 | = cubic feet per minute ($ft^3$/min) |

## Work Measurement

| | | |
|---|---|---|
| British thermal units (Btu) | × 777.5 | = foot-pounds (ft-lb) |
| British thermal units (Btu) | × 39,270 | = horsepower-hours (hp·hr) |
| British thermal units (Btu) | × 29,280 | = kilowatt-hours (kW·hr) |
| foot-pounds (ft-lb) | × 1,286 | = British thermal units (Btu) |
| foot-pounds (ft-lb) | × 50,500,000 | = horsepower-hours (hp·hr) |
| foot-pounds (ft-lb) | × 37,660,000 | = kilowatt-hours (kW·hr) |
| horsepower-hours (hp·hr) | × 2,547 | = British thermal units (Btu) |
| horsepower-hours (hp·hr) | × 0.7457 | = kilowatt-hours (kW·hr) |
| kilowatt-hours (kW·hr) | × 3,415 | = British thermal units (Btu) |
| kilowatt-hours (kW·hr) | × 1.241 | = horsepower-hours (hp·hr) |

## Power Measurement

| | | |
|---|---|---|
| boiler horsepower | × 33,480 | = British thermal units per hour (Btu/hr) |
| boiler horsepower | × 9.8 | = kilowatts (kW) |
| British thermal units/second (Btu/sec) | × 1.0551 | = kilowatts (kW) |
| British thermal units/minute (Btu/min) | × 12.96 | = foot-pounds per second (ft-lb/sec) |
| British thermal units/minute (Btu/min) | × 0.02356 | = horsepower (hp) |
| British thermal units/minute (Btu/min) | × 0.01757 | = kilowatts (kW) |
| British thermal units/hour (Btu/hr) | × 0.293 | = watts (W) |
| British thermal units/hour (Btu/hr) | × 12.96 | = foot-pounds per minute (ft-lb/min) |
| British thermal units/hour (Btu/hr) | × 0.00039 | = horsepower (hp) |
| foot-pounds per second (ft-lb/sec) | × 771.7 | = British thermal units per minute (Btu/min) |
| foot-pounds per second (ft-lb/sec) | × 1,818 | = horsepower (hp) |
| foot-pounds per second (ft-lb/sec) | × 1,356 | = kilowatts (kW) |
| foot-pounds per minute (ft-lb/min) | × 303,000 | = horsepower (hp) |

| | | |
|---|---|---|
| foot-pounds per minute (ft-lb/min) | × 226,000 | = kilowatts (kW) |
| horsepower (hp) | × 42.44 | = British thermal units per minute (Btu/min) |
| horsepower (hp) | × 33,000 | = foot-pounds per minute (ft-lb/min) |
| horsepower (hp) | × 550 | = foot-pounds per second (ft-lb/sec) |
| horsepower (hp) | × 1,980,000 | = foot-pounds per hour (ft-lb/hr) |
| horsepower (hp) | × 0.7457 | = kilowatts (kW) |
| horsepower (hp) | × 745.7 | = watts (W) |
| kilowatts (kW) | × 0.9478 | = British thermal units per second (Btu/sec) |
| kilowatts (kW) | × 56.92 | = British thermal units per minute (Btu/min) |
| kilowatts (kW) | × 3,413 | = British thermal units per hour (Btu/hr) |
| kilowatts (kW) | × 44,250 | = foot-pounds per minute (ft-lb/min) |
| kilowatts (kW) | × 737.6 | = foot-pounds per second (ft-lb/sec) |
| kilowatts (kW) | × 1.341 | = horsepower (hp) |
| tons of refrig. (US) | × 288,000 | = British thermal units per 24 hours |
| watts (W) | × 0.05692 | = British thermal units per minute (Btu/min) |
| watts (W) | × 0.7376 | = foot-pounds (force) per second (ft-lb/sec) |
| watts (W) | × 44.26 | = foot-pounds per minute (ft-lb/min) |
| watts (W) | × 1,341 | = horsepower (hp) |

## Velocity Measurement

| | | |
|---|---|---|
| feet/minute (ft/min) | × 0.01667 | = feet per second (ft/sec) |
| feet/minute (ft/min) | × 0.01136 | = miles per hour (mph) |
| feet/second (ft/sec) | × 0.6818 | = miles per hour (mph) |
| miles/hour (mph) | × 88 | = feet per minute (ft/min) |
| miles/hour (mph) | × 1.467 | = feet per second (ft/sec) |

## Miscellaneous

| | | |
|---|---|---|
| grade: 1 percent (or 0.01) | | = 1 foot per 100 feet |

## METRIC CONVERSIONS

### Linear Measurement

| | | |
|---|---|---|
| inch (in.) | × 25.4 | = millimeters (mm) |
| inch (in.) | × 2.54 | = centimeters (cm) |
| foot (ft) | × 304.8 | = millimeters (mm) |
| foot (ft) | × 30.48 | = centimeters (cm) |
| foot (ft) | × 0.3048 | = meters (m) |
| yard (yd) | × 0.9144 | = meters (m) |
| mile (mi) | × 1,609.3 | = meters (m) |
| mile (mi) | × 1.6093 | = kilometers (km) |
| millimeter (mm) | × 0.03937 | = inches (in.) |
| centimeter (cm) | × 0.3937 | = inches (in.) |
| meter (m) | × 39.3701 | = inches (in.) |
| meter (m) | × 3.2808 | = feet (ft) |
| meter (m) | × 1.0936 | = yards (yd) |
| kilometer (km) | × 0.6214 | = miles (mi) |

### Area Measurement

| | | |
|---|---|---|
| square meter ($m^2$) | × 10,000 | = square centimeters ($cm^2$) |
| hectare (ha) | × 10,000 | = square meters ($m^2$) |
| square inch ($in.^2$) | × 6.4516 | = square centimeters ($cm^2$) |
| square foot ($ft^2$) | × 0.092903 | = square meters ($m^2$) |
| square yard ($yd^2$) | × 0.8361 | = square meters ($m^2$) |
| acre | × 0.004047 | = square kilometers ($km^2$) |
| acre | × 0.4047 | = hectares (ha) |
| square mile ($mi^2$) | × 2.59 | = square kilometers ($km^2$) |
| square centimeter ($cm^2$) | × 0.16 | = square inches ($in.^2$) |
| square meters ($m^2$) | × 10.7639 | = square feet ($ft^2$) |
| square meters ($m^2$) | × 1.1960 | = square yards ($yd^2$) |
| hectare (ha) | × 2.471 | = acres |
| square kilometer ($km^2$) | × 247.1054 | = acres |
| square kilometer ($km^2$) | × 0.3861 | = square miles ($mi^2$) |

### Volume Measurement

| | | |
|---|---|---|
| cubic inch ($in.^3$) | × 16.3871 | = cubic centimeters ($cm^3$) |
| cubic foot ($ft^3$) | × 28,317 | = cubic centimeters ($cm^3$) |
| cubic foot ($ft^3$) | × 0.028317 | = cubic meters ($m^3$) |
| cubic foot ($ft^3$) | × 28.317 | = liters (L) |
| cubic yard ($yd^3$) | × 0.7646 | = cubic meters ($m^3$) |

| | | |
|---|---|---|
| acre foot (acre-ft) | × 1233.48 | = cubic meters ($m^3$) |
| ounce (US fluid) (oz) | × 0.029573 | = liters (L) |
| quart (liquid) (qt) | × 946.9 | = milliliters (mL) |
| quart (liquid) (qt) | × 0.9463 | = liters (L) |
| gallon (gal) | × 3.7854 | = liters (L) |
| gallon (gal) | × 0.0037854 | = cubic meters ($m^3$) |
| peck (pk) | × 0.881 | = decaliters (dL) |
| bushel (bu) | × 0.3524 | = hectoliters (hL) |
| cubic centimeters ($cm^3$) | × 0.061 | = cubic inches ($in.^3$) |
| cubic meter ($m^3$) | × 35.3183 | = cubic feet ($ft^3$) |
| cubic meter ($m^3$) | × 1.3079 | = cubic yards ($yd^3$) |
| cubic meter ($m^3$) | × 264.2 | = gallons (gal) |
| cubic meter ($m^3$) | × 0.000811 | = acre-feet (acre-ft) |
| liter (L) | × 1.0567 | = quart (liquid) (qt) |
| liter (L) | × 0.264 | = gallons (gal) |
| liter (L) | × 0.0353 | = cubic feet ($ft^3$) |
| decaliter (dL) | × 2.6417 | = gallons (gal) |
| decaliter (dL) | × 1.135 | = pecks (pk) |
| hectoliter (hL) | × 3.531 | = cubic feet ($ft^3$) |
| hectoliter (hL) | × 2.84 | = bushels (bu) |
| hectoliter (hL) | × 0.131 | = cubic yards ($yd^3$) |
| hectoliter (hL) | × 26.42 | = gallons (gal) |

## Pressure Measurement

| | | |
|---|---|---|
| pound/square inch (psi) | × 6.8948 | = kilopascals (kPa) |
| pound/square inch (psi) | × 0.00689 | = pascals (Pa) |
| pound/square inch (psi) | × 0.070307 | = kilograms/square centimeter ($kg/cm^2$) |
| pound/square foot ($lb/ft^2$) | × 47.8803 | = pascals (Pa) |
| pound/square foot ($lb/ft^2$) | × 0.000488 | = kilograms/square centimeter ($kg/cm^2$) |
| pound/square foot ($lb/ft^2$) | × 4.8824 | = kilograms/square meter ($kg/m^2$) |
| inches of mercury | × 3,376.8 | = pascals (Pa) |
| inches of water | × 248.84 | = pascals (Pa) |
| bar | × 100,000 | = newtons per square meter |
| pascals (Pa) | × 1 | = newtons per square meter |
| pascals (Pa) | × 0.000145 | = pounds/square inch (psi) |
| kilopascals (kPa) | × 0.145 | = pounds/square inch (psi) |
| pascals (Pa) | × 0.000296 | = inches of mercury (at 60°F) |

| | | |
|---|---|---|
| kilogram/square centimeter ($kg/cm^2$) | × 14.22 | = pounds/square inch (psi) |
| kilogram/square centimeter ($kg/cm^2$) | × 28.959 | = inches of mercury (at 60°F) |
| kilogram/square meter ($kg/m^2$) | × 0.2048 | = pounds per square foot ($lb/ft^2$) |
| centimeters of mercury | × 0.4461 | = feet of water |

## Weight Measurement

| | | |
|---|---|---|
| ounce (oz) | × 28.3495 | = grams (g) |
| pound (lb) | × 0.045359 | = grams (g) |
| pound (lb) | × 0.4536 | = kilograms (kg) |
| ton (short) | × 0.9072 | = megagrams (metric ton) |
| pounds/cubic foot ($lb/ft^3$) | × 16.02 | = grams per liter (g/L) |
| pounds/million gallons (lb/mil gal) | × 0.1198 | = grams per cubic meter ($g/m^3$) |
| gram (g) | × 15.4324 | = grains (gr) |
| gram (g) | × 0.0353 | = ounces (oz) |
| gram (g) | × 0.0022 | = pounds (lb) |
| kilograms (kg) | × 2.2046 | = pounds (lb) |
| kilograms (kg) | × 0.0011 | = tons (short) |
| megagram (metric ton) | × 1.1023 | = tons (short) |
| grams/liter (g/L) | × 0.0624 | = pounds per cubic foot ($lb/ft^3$) |
| grams/cubic meter ($g/m^3$) | × 8.3454 | = pounds/million gallons (lb/mil gal) |

## Flow Rates

| | | |
|---|---|---|
| gallons/second (gps) | × 3.785 | = liters per second (L/sec) |
| gallons/minute (gpm) | × 0.00006308 | = cubic meters per second ($m^3/sec$) |
| gallons/minute (gpm) | × 0.06308 | = liters per second (L/sec) |
| gallons/hour (gph) | × 0.003785 | = cubic meters per hour ($m^3/hr$) |
| gallons/day (gpd) | × 0.000003785 | = million liters per day (ML/day) |
| gallons/day (gpd) | × 0.003785 | = cubic meters per day ($m^3/day$) |
| cubic feet/second ($ft^3/sec$) | × 0.028317 | = cubic meters per second ($m^3/sec$) |
| cubic feet/second ($ft^3/sec$) | × 1,699 | = liters per minute (L/min) |
| cubic feet/minute ($ft^3/min$) | × 472 | = cubic centimeters/second ($cm^3/sec$) |
| cubic feet/minute ($ft^3/min$) | × 0.472 | = liters per second (L/sec) |
| cubic feet/minute ($ft^3/min$) | × 1.6990 | = cubic meters per hour ($m^3/hr$) |

| | | | |
|---|---|---|---|
| million gallons/day (mgd) | × 43.8126 | = | liters per second (L/sec) |
| million gallons/day (mgd) | × 0.003785 | = | cubic meters per day ($m^3$/day) |
| million gallons/day (mgd) | × 0.043813 | = | cubic meters per second ($m^3$/sec) |
| gallons/square foot (gal/$ft^2$) | × 40.74 | = | liters per square meter (L/$m^2$) |
| gallons/acre/day (gal/acre/day) | × 0.0094 | = | cubic meters/hectare/day ($m^3$/ha/day) |
| gallons/square foot/day (gal/$ft^2$/day) | × 0.0407 | = | cubic meters/square meter/day ($m^3$/$m^2$/day) |
| gallons/square foot/day (gal/$ft^2$/day) | × 0.0283 | = | liters/square meter/day (L/$m^2$/day) |
| gallons/square foot/minute (gal/$ft^2$/min) | × 2.444 | = | cubic meters/square meter/hour ($m^3$/$m^2$/hr) = m/hr |
| gallons/square foot/minute (gal/$ft^2$/min) | × 0.679 | = | liters/square meter/second (L/$m^2$/sec) |
| gallons/square foot/minute (gal/$ft^2$/min) | × 40.7458 | = | liters/square meter/minute (L/$m^2$/min) |
| gallons/capita/day (gpcd) | × 3.785 | = | liters/day/capita (L/d per capita) |
| liters/second (L/sec) | × 22,824.5 | = | gallons per day (gpd) |
| liters/second (L/sec) | × 0.0228 | = | million gallons per day (mgd) |
| liters/second (L/sec) | × 15.8508 | = | gallons per minute (gpm) |
| liters/second (L/sec) | × 2.119 | = | cubic feet per minute ($ft^3$/min) |
| liters/minute (L/min) | × 0.0005886 | = | cubic feet per second ($ft^3$/sec) |
| cubic centimeters/second ($cm^3$/sec) | × 0.0021 | = | cubic feet per minute ($ft^3$/min) |
| cubic meters/second ($m^3$/sec) | × 35.3147 | = | cubic feet per second ($ft^3$/sec) |
| cubic meters/second ($m^3$/sec) | × 22.8245 | = | million gallons per day (mgd) |
| cubic meters/second ($m^3$/sec) | × 15,850.3 | = | gallons per minute (gpm) |
| cubic meters/hour ($m^3$/hr) | × 0.5886 | = | cubic feet per minute ($ft^3$/min) |
| cubic meters/hour ($m^3$/hr) | × 4.403 | = | gallons per minute (gpm) |
| cubic meters/day ($m^3$/day) | × 264.1720 | = | gallons per day (gpd) |
| cubic meters/day ($m^3$/day) | × 0.00026417 | = | million gallons per day (mgd) |
| cubic meters/hectare/day ($m^3$/ha/day) | × 106.9064 | = | gallons per acre per day (gal/acre/day) |
| cubic meters/square meter/day ($m^3$/$m^2$/day) | × 24.5424 | = | gallons/square foot/day (gal/$ft^2$/day) |
| liters/square meter/minute (L/$m^2$/min) | × 0.0245 | = | gallons/square foot/minute (gal/$ft^2$/min) |
| liters/square meter/minute (L/$m^2$/min) | × 35.3420 | = | gallons/square foot/day (gal/$ft^2$/day) |

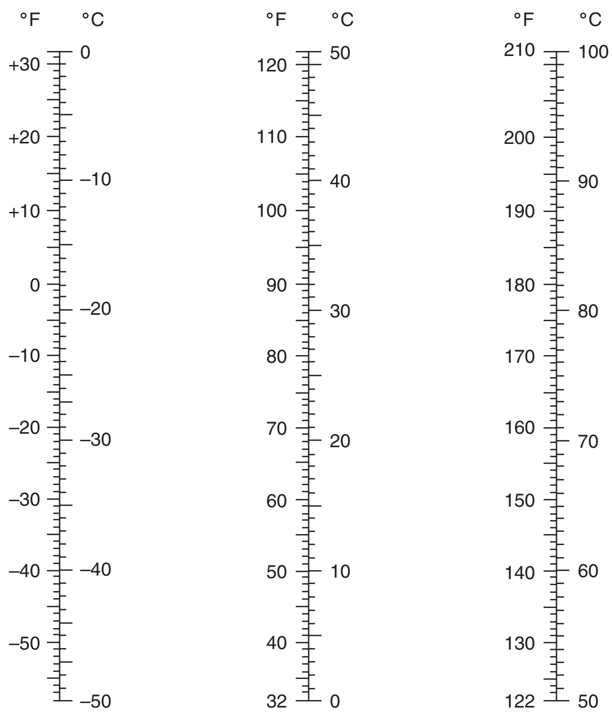
## Work, Heat, and Energy

| | | | |
|---|---|---|---|
| British thermal units (Btu) | × 1.0551 | = | kilojoules (kJ) |
| British thermal units (Btu) | × 0.2520 | = | kilogram-calories (kg-cal) |
| foot-pound (force) (ft-lb) | × 1.3558 | = | joules (J) |
| horsepower-hour (hp•hr) | × 2.6845 | = | megajoules (MJ) |
| watt-second (W-sec) | × 1.000 | = | joules (J) |
| watt-hour (W•hr) | × 3.600 | = | kilojoules (kJ) |
| kilowatt-hour (kW•hr) | × 3,600 | = | kilojoules (kJ) |
| kilowatt-hour (kW•hr) | × 3,600,000 | = | joules (J) |
| British thermal units per pound (Btu/lb) | × 0.5555 | = | kilogram-calories per kilogram (kg-cal/kg) |
| British thermal units per cubic foot (Btu/$ft^3$) | × 8.8987 | = | kilogram-calories/cubic meter (kg-cal/$m^3$) |
| kilojoule (kJ) | × 0.9478 | = | British thermal units (Btu) |
| kilojoule (kJ) | × 0.00027778 | = | kilowatt-hours (kW•hr) |
| kilojoule (kJ) | × 0.2778 | = | watt-hours (W•hr) |
| joule (J) | × 0.7376 | = | foot-pounds (ft-lb) |
| joule (J) | × 1.0000 | = | watt-seconds (W-sec) |
| joule (J) | × 0.2399 | = | calories (cal) |
| megajoule (MJ) | × 0.3725 | = | horsepower-hour (hp•hr) |
| kilogram-calories (kg-cal) | × 3.9685 | = | British thermal units (Btu) |
| kilogram-calories per kilogram (kg-cal/kg) | × 1.8000 | = | British thermal units per pound (Btu/lb) |
| kilogram-calories per liter (kg-cal/L) | × 112.37 | = | British thermal units per cubic foot (Btu/$ft^3$) |
| kilogram-calories/cubic meter (kg-cal/$m^3$) | × 0.1124 | = | British thermal units per cubic foot (Btu/$ft^3$) |

## Velocity, Acceleration, and Force

| | | | |
|---|---|---|---|
| feet per minute (ft/min) | × 18.2880 | = | meters per hour (m/hr) |
| feet per hour (ft/hr) | × 0.3048 | = | meters per hour (m/hr) |
| miles per hour (mph) | × 44.7 | = | centimeters per second (cm/sec) |
| miles per hour (mph) | × 26.82 | = | meters per minute (m/min) |
| miles per hour (mph) | × 1.609 | = | kilometers per hour (km/hr) |
| feet/second/second (ft/$sec^2$) | × 0.3048 | = | meters/second/second (m/$sec^2$) |
| inches/second/second (in./$sec^2$) | × 0.0254 | = | meters/second/second (m/$sec^2$) |
| pound-force (lbf) | × 4.44482 | = | newtons (N) |
| centimeters/second (cm/sec) | × 0.0224 | = | miles per hour (mph) |

| | | | |
|---|---|---|---|
| meters/second (m/sec) | × 3.2808 | = | feet per second (ft/sec) |
| meters/minute (m/min) | × 0.0373 | = | miles per hour (mph) |
| meters per hour (m/hr) | × 0.0547 | = | feet per minute (ft/min) |
| meters per hour (m/hr) | × 3.2808 | = | feet per hour (ft/hr) |
| kilometers/second (km/sec) | × 2.2369 | = | miles per hour (mph) |
| kilometers/hour (km/hr) | × 0.0103 | = | miles per hour (mph) |
| meters/second/second ($m/sec^2$) | × 3.2808 | = | feet/second/second ($ft/sec^2$) |
| meters/second/second ($m/sec^2$) | × 39.3701 | = | inches/second/second ($in./sec^2$) |
| newtons (N) | × 0.2248 | = | pounds force (lbf) |




| | | |
|---|---|---|
| 0.555 (°F – 32) | = | degrees Celsius (°C) |
| (1.8 × °C) + 32 | = | degrees Fahrenheit (°F) |
| °C + 273.15 | = | kelvin (K) |
| boiling point* | = | 212°F |
| | = | 100°C |
| | = | 373 K |
| freezing point* | = | 32°F |
| | = | 0°C |
| | = | 273 K |

*At 14.696 psia, 101.325 kPa.

Celsius/Fahrenheit Comparison Graph

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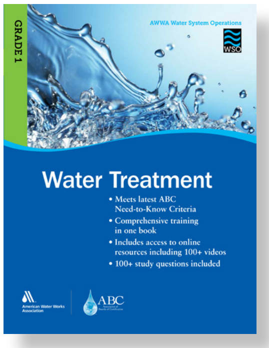
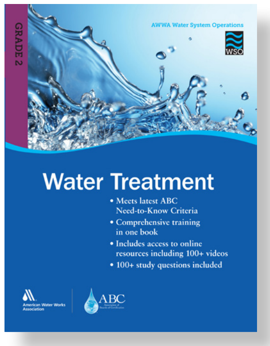
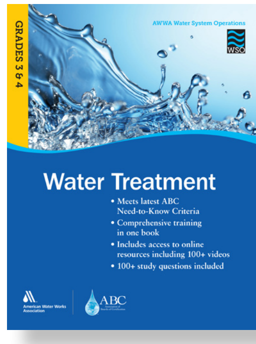


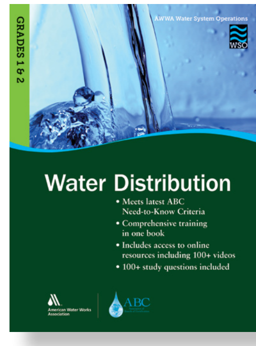

**Water Treatment Grade 1**



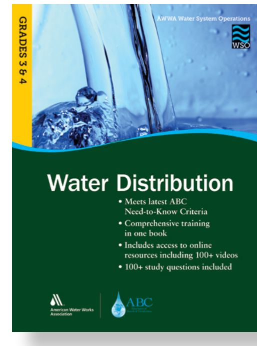

**Water Treatment Grade 2**




**Water Treatment Grade 3 & 4**




**Water Distribution Grade 1 & 2**




**Water Distribution Grade 3 & 4**

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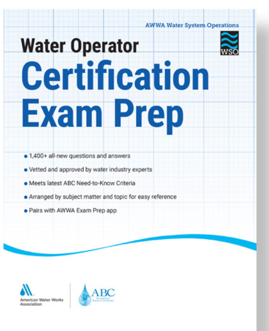


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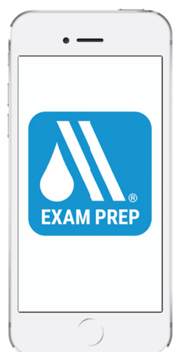


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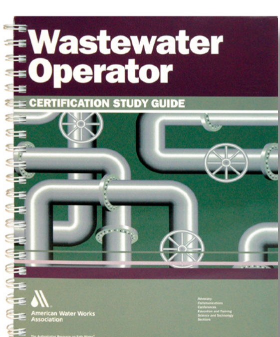
## Looking for a wastewater specific resource?

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American Water Works Association

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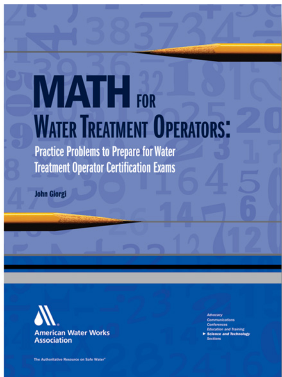
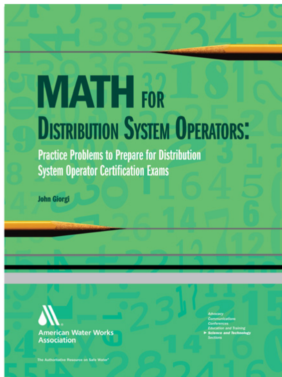
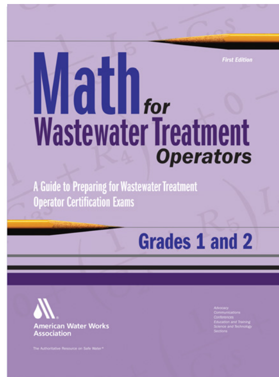
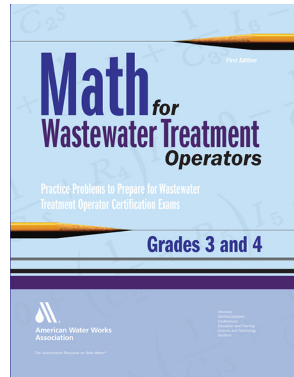
## Struggling with math?

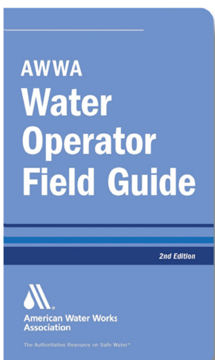


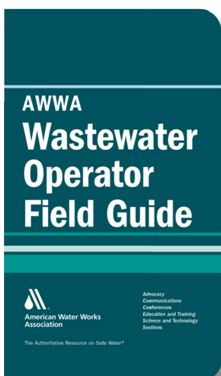




## On-the-job resources

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**State of California**
**Department of Fish and Wildlife**

# Memorandum

**Date:** February 25, 2021

**To:** Erik Ekdahl, Deputy Director of Water Rights
State Water Resources Control Board
Division of Water Rights
Post Office Box 2000
Sacramento, CA 95812-2000
Erik.Ekdahl@waterboards.ca.gov

DocuSigned by:
Gregg Erickson
BE74D4C93C604EA...

**From:** Gregg Erickson, Regional Manager
**California Department of Fish and Wildlife-Bay Delta Region, 2825 Cordelia Road, Suite 100, Fairfield, CA 94534**

**Subject:** Letter of Support for City of Santa Cruz Petitions for Change and Time Extension

The California Department of Fish and Wildlife (CDFW) is writing in support of the City of Santa Cruz (City) water rights petitions noticed on February 10, 2021 (petitions for change and time extension for water right Permits 16123 and 16601 (Applications 22318 and 23710) and petitions for change for Licenses 1553, 7200 and 9847 (Applications 4017, 5215, and 17913).

CDFW has worked with the City and the National Marine Fisheries Services (NMFS) for many years to develop an integrated water resources management strategy that is protective of special status anadromous salmonid species while also providing for long-term water supply reliability. The petitions further a larger project (including a Habitat Conservation Plan negotiated with CDFW and NMFS) designed to enhance instream flow for coho salmon and steelhead in the San Lorenzo River, Majors Creek, Laguna Creek and Liddell Creek watersheds in Santa Cruz County, California. The petitions would contribute to the recovery of these species and are therefore consistent with Action 4 of the California Water Action Plan (California Natural Resources Agency et al. 2014) which encourages the protection and restoration of important ecosystems by enhancing water flows in stream systems statewide.

CDFW appreciates the work the City has done to develop protective flow criteria for fisheries and supports the flows included in the petition package. CDFW recognizes that, to reliably serve public water supply needs and commit to the flows, the City needs the water right changes and extensions described in the petitions. CDFW also recognizes that the City has invested significant effort and resources into conservation measures and infrastructure improvements (treatment, distribution efficiencies, etc.) to support its water supply needs, dedicating as much water as possible to environmental uses. In short, the petitions represent the culmination of years of planning and investment by the City, CDFW, and NMFS in support of defensible environmental flows.

If you have questions regarding CDFW's support of the Project, please contact Ms. Jessie Maxfield, Water Rights Coordinator, at Jessica.Maxfield@wildlife.ca.gov; or Mr. Craig Weightman, Environmental Program Manager, at Craig.Weightman@wildlife.ca.gov.

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STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

# ORDER WR 2009-0061

In the Matter of Petition for Reconsideration of
Division of Water Rights Refusal to Accept Protest by
United States Marine Corps Base, Camp Pendleton
against

**CITY OF SANTA CRUZ**

Regarding Petitions for Change under License 9847 (Application 17913) and
Permits 16123 and 16601 (Applications 22318 and 23710, respectively)

SOURCES: San Lorenzo River and Newell Creek

COUNTY: Santa Cruz

## ORDER DENYING RECONSIDERATION

BY THE BOARD:

### 1.0 INTRODUCTION

This order denies the request for reconsideration by the United States Marine Corps Base, Camp Pendleton (Camp Pendleton) of the State Water Resources Control Board (State Water Board or Board), Division of Water Rights' (Division) order (by letter of April 29, 2009) refusing to accept Camp Pendleton's protest against the City of Santa Cruz' (Santa Cruz) Petitions for Change under License 9847 (Application 17913) and Permits 16123 and 16601 (Applications 22318 and 23710, respectively). Camp Pendleton's protest and petition for reconsideration raise the legal issue of whether a water right holder or applicant may petition to the State Water Board to change an application, permit or license to allow for direct diversion when the current application, permit or license is for diversion to storage. This order resolves conflicting language in prior decisions and finds that the State Water Board has authority to approve such a change. Therefore, the petition for reconsideration is denied. (Cal. Code Regs., tit. 23 § 770.)[1]

## 2.0 BACKGROUND

The City of Santa Cruz holds License 9847 and Permits 16123 and 16601, which allow for diversion to storage from San Lorenzo River and Newell Creek into Loch Lomond Reservoir. During the winter months, Santa Cruz uses water from Loch Lomond Reservoir at the same time that it is filling the reservoir. This constitutes a direct diversion. Santa Cruz' water rights authorize diversion to storage, and do not allow for direct diversion.

On December 28, 2006, Santa Cruz petitioned the State Water Board to change its rights to include the ability to directly divert from the stream.[2] On November 7, 2008, Camp Pendleton protested Santa Cruz's petitions on the grounds that the proposed change is contrary to law and against the public interest. Camp Pendleton expressed in the cover letter for the protest that its concerns are related to the legal issues involved with the Santa Cruz petitions, and the potential future consequences for its own water rights on the Santa Margarita River, rather than to the effects of the diversions by City of Santa Cruz. On April 29, 2009, the Division issued a letter from Victoria Whitney, State Water Board Deputy Director for Water Rights (Deputy Director), to Ralph E. Pearcy II of the United States Marine Corps (Division Letter). The Division Letter refused to accept the allegation that the petitioned-for changes would be contrary to law. It also stated that the allegation that the changes would not serve the public interest were insufficient as stated. The letter permitted Camp Pendleton to provide supplemental information to support its public interest allegation within 30 days, and stated that the protest would not be accepted on this ground if no further information were submitted. Camp Pendleton did not submit additional information within 30 days, and has acknowledged that it does not intend to supplement its

[1] The Water Code directs the State Water Board to act on a petition for reconsideration within 90 days from the date on which the State Water Board adopts the decision or order that is the subject of the petition. (Wat. Code, § 1122.) If the State Water Board fails to act within that 90-day period, a petitioner may seek judicial review, but the State Water Board is not divested of jurisdiction to act upon the petition simply because the State Water Board failed to complete its review of the petition on time. (See *California Correctional Peace Officers Ass'n. v. State Personnel Bd.* (1995) 10 Cal.4th 1133, 1147-48, 1150-51 [43 Cal.Rptr.2d 681]; State Water Board Order WQ 98-05-UST at pp. 3-4.)

[2] At the same time, Santa Cruz petitioned for an extension of time to put the water to use under Permits 16123 and 16601; Camp Pendleton did not protest that petition.

allegation that Santa Cruz' change petition is contrary to the public interest.[3] On June 1, 2009, Camp Pendleton filed a request for reconsideration of the Division Letter.

## 3.0 GROUNDS FOR RECONSIDERATION

Any interested person may petition the State Water Board for reconsideration of a decision or order on any of the following grounds:

(a) [i]rregularity in the proceedings, or any ruling, or abuse of discretion, by which the person was prevented from having a fair hearing;

(b) [t]he decision or order is not supported by substantial evidence;

(c) [t]here is relevant evidence which, in the exercise of reasonable diligence, could not have been produced;

(d) [e]rror in law.

(Cal. Code Regs., tit. 23, § 768.)

## 4.0 CAMP PENDLETON'S PROTEST AND PETITION FOR RECONSIDERATION

Camp Pendleton's petition asserts that approving Santa Cruz's change petitions would be contrary to law. Camp Pendleton reads Water Code section 1700 et seq., which addresses changes to water rights, to limit the petitions for change that the State Water Board may entertain to petitions for changes in point of diversion, place of use, or purpose of use. It acknowledges that the State Water Board maintains broad authority to change existing water rights, but argues that this authority stems from, and is limited by, the duty to prevent waste and to protect the environment and the public interest. It asserts that the Board cannot change the "substantive features" of the water right, like the method of diversion, for the convenience of the permittee or in order to conform the permit to actual conditions as opposed to for the purpose of preventing waste. Camp Pendleton argues that the reference to petitions for changes "other than changes in point of diversion, place of use, and purpose of use" in California Code of Regulations, title 23, section 791, subdivision (e) therefore relates solely to the State Water

[3] As the protest raised only legal and public interest grounds, the Division's April 2009 letter effectively refused to accept the entire protest. Because the letter was a final determination of Camp Pendleton's rights with respect to the proceedings on the change petition, it is appropriately treated as an order or decision subject to review under section 1122 of the Water Code. (See Gov. Code, 11405.50, subd. (a); cf. *People ex rel. State Lands Commission v. City of Long Beach* (1960) *183 Cal.App.2d 271, 273* [An order denying leave to intervene is appealable].)

Board's authority to change terms and conditions imposed in an existing license, rather than to the "substantive features" of a water right.

Additionally, Camp Pendleton asserts that, because direct diversion and storage rights are so different, adding direct diversion to a water right that allows only diversion for storage initiates a new water right, contrary to California Code of Regulations, title 23, section 791 and to the public interest. The petition also argues that the Division Letter did not provide a principled explanation for allegedly departing from State Water Board precedent in State Water Board Order WR 85-4 and State Water Board Decision 1380 (1971). Camp Pendleton asserts that such a departure contravenes the public interest in consistency and predictability in agency decision-making.

Finally, Camp Pendleton requests that, if the petition for reconsideration is denied, the State Water Board confirm the determination in the Division Letter, in order to provide clarity on the issue of whether direct diversion may be added to an existing water right permit or license for diversion to storage.

To the extent that Camp Pendleton's petition and protest may be read to include other arguments not addressed in this order, these arguments fail to raise substantial issues related to the causes for reconsideration set out in California Code of Regulations, title 23, section 768, and are hereby dismissed.

## 5.0 APPLICABLE STATUTE AND REGULATIONS

Water Code sections 1700 through 1705 govern the process by which changes in the place of use, purpose of use, or point of diversion, of an appropriative water right may be made.[4] The sections outline the application, notice, protest, investigation and hearing requirements for change petitions. (Wat. Code, §§ 1700-1701.4, 1703-1705; see also Cal. Code Regs., tit. 23, §§ 791-816.) Before the State Water Board can grant a change petition, the petitioner must also demonstrate that the change will not injure any legal user of water and will not effectively initiate a new right. (Wat. Code, § 1702; Cal. Code Regs., tit. 23, § 791, subd. (a).)

[4] These sections apply to appropriations under the Water Code or the Water Commission Act. Section 1706 of the Water Code applies to changes to pre-1914 rights. Section 1707, which addresses changes for the protection of instream beneficial uses, applies to all types of water rights.

The same procedures are to be followed insofar as is possible for processing change petitions for changes other than place of use, purpose of use or point of diversion. (Cal. Code Regs., tit 23, § 791, subd. (e).)

## 6.0 DISCUSSION

### 6.1 Initiation of New Right

Camp Pendleton asserts that water rights for direct diversion and for storage are so fundamentally different that adding direct diversion to a storage right necessarily initiates a new water right. To support this contention, Camp Pendleton points out that the purpose of storage is to collect water in high flow times for use during low flow times, while direct diversions put water to immediate beneficial use. Camp Pendleton also notes that the limitation inherent in direct diversion rights, namely the amount that can be applied to beneficial use, is not present in storage rights, and that this can lead to increasing the amount of water diverted, creating a new right.

An appropriative water right has several basic elements, including priority, source of water, season of diversion, amount of diversion, point of diversion, place of use, and purpose of use. (See, e.g., Wat. Code, § 1260 et seq [defining the contents of a water right application]; Hutchins, The California Law of Water Rights (1956) “Elements of the Appropriative Right,” pp. 130-154 (hereinafter Hutchins); *Central Delta Water Agency v. State Water Resources Control Board* (2004) 124 Cal.App.4th 245, 253, 257 [ordering State Water Board to set aside permits where application lacked sufficient specificity as to actual uses, amounts and places of use].) Some of these defining elements may be changed by the appropriator, so long as the change does not injure other water users. (See Hutchins, *supra.*, p. 175 [“It has long been settled in California that an appropriator may change the point of diversion, place of use, or character of the use of water … provided that the rights of others are not thereby impaired”]; Wat. Code, § 1701; Cal. Code Regs., tit. 23, § 791; *City of San Bernardino v. City of Riverside* (1921) 186 Cal. 7, 28-29 [allowing change in the place of use, character of use, and point of diversion so long as no others are injured]; *Hand v. Cleese* (1927) 202 Cal. 36, 45 [allowing diverter to change the means of diversion of waters from a specific ditch to a different “natural depression” as the change did not cause injury].) A fundamental principle of water right law, however, is that a right cannot be so changed that it in essence constitutes a new right. (Cal. Code Regs., tit. 23, § 791, subd. (a).) For example, an appropriator cannot expand an existing right to appropriate a greater amount of water, to increase the season of diversion, or to use a different source of water. (Cal. Code Regs., tit. 23, § 699; *Johnson Rancho County Water District v. State Water Rights Board* (1965) 235 Cal.App.2d 863, 879.)

The common feature among the changes that have been found to constitute the creation of a new right, as opposed to a change in an existing right, is that the changes that initiate a new right increase the amount of water taken from a water source at a given time. (See *Johnson Rancho County Water District v. State Water Rights Board, supra*, 235 Cal.App.2d at 879 [approving as "commonsense" the granting of a change in a water right application that did not increase the amount of water appropriated or its source]; State Water Board Order WR 79-24 at 4 [approving only the part of a proposed change in place of use which would not increase the season or amount of water diverted]; State Water Board Decision 940 (1959) ["a direct diversion right can be converted to a storage right only to the extent there is no change in rate of diversion from the stream …"]; George A. Gould, Water Rights Transfers and Third-Party Effects, 23 Land and Water Law Review 1 (1988) p. 9 ["To paraphrase Mead, 'the later comers had an equal claim to protection from the enlargement of prior uses which reduced the flow available to satisfy their appropriations' … consequently, a rate of diversion … limits the 'flow' to which each appropriator may claim a priority…. Some states later added a volume ("quantity") limitation."] *referencing* E. Mead, Irrigation Institutions 66, 67 (1903).) Other elements of a water right can be changed, as they are secondary to the fundamental right to use the water. (*City of San Bernardino v. City of Riverside, supra*, 186 Cal. at 29 ["The reasons for the right to make the above changes are that, by his taking and devoting water to a beneficial use, the appropriator has acquired the right to take the quantity which he beneficially uses, as against others having no superior rights in the source, and that neither the particular place of use, the character of the use, nor the place of taking is a necessary factor in such acquisition."].)

A change from a storage right to direct diversion (or vice-versa) is a change in what is done with water after it is diverted from the natural streamflow. As Camp Pendleton points out, stored water is saved for later use, while directly diverted water is used immediately (or after a short period of regulatory storage). This change in what happens to water after diversion does not necessarily affect the rate of diversion, and therefore does not per se result in an expansion of a water right.

Any approval of a change to allow storage or direct diversion must be appropriately conditioned to ensure that the change does not, in fact, result in increased diversions over the amount to which the petitioner would otherwise have been legally entitled and as a practical matter would otherwise have been able to divert, were the permit to have remained unchanged. This includes ensuring that the current diversion limits imposed, e.g., by hydrology, the petitioner's physical facilities and the current permit, remain in effect; that any growth still allowed during the development period is also within current limits of what would have occurred in the absence of the change; and that the petitioner can demonstrate to the satisfaction of the State Water Board that the current limits will not be exceeded in any water year. Camp Pendleton notes that direct diversions are limited by the amount of water that can currently be applied to beneficial use, while a storage right does not contain this inherent limitation. However, a limitation may be imposed as part of the process of approving a change to allow storage, thereby ensuring that the right is not enlarged. (See Cal. Code Regs., tit. 23, § 792, subds. (b), (c) [describing conditioning authority for change petition approvals].) The requirements in a permit that limit the amount of a diversion can, and must, remain in place when change petitions are approved, regardless of whether the water is diverted for storage or immediate use. The situation presented is no different than when a water right holder requests a change to a new point of diversion that has a larger capacity either due to the physical limitations of the diversion facilities or due to the amount of water physically available at the diversion point: while the capacity of the old point of diversion is no longer a limit on the diversion amount, it is possible to change to a new point of diversion and still maintain the prior limit on diversions as a result of conditions imposed on the approval of the change.

The argument that storage and diversion are such fundamentally different purposes that they are per se different rights is further undermined by the accepted process of regulatory storage. Waters appropriated under direct diversion do not need to be instantaneously put to beneficial use; they may be subject to regulatory storage for short periods. (See Cal. Code Regs., tit. 23, §§ 657-8.) Even riparian users, who are not authorized to divert water to seasonal storage because of the right's correlative nature and link to the natural flow of a river, are permitted to regulate water in the short term. (See *Seneca Consolidated Gold Mines Co v. Great Western Power Co.* (1930) 209 Cal. 206, 215-216, 219.) Therefore, a change in an appropriative right to allow either direct diversion or storage, when such was not previously allowed, does not, by definition, result in the creation of a new right.

### 6.2 State Water Board Authority

Camp Pendleton also argues that there is no authority under which the State Water Board can change a water right from storage to direct diversion at the water right holder's request. Camp Pendleton reads Water Code provisions authorizing changes in point of diversion, place of use or purpose of use as limiting the State Water Board's authority to approve changes other than those listed.[5] (*Id*. § 1700, et seq.) Camp Pendleton points to the interpretive canon *expressio unius est exclusio alterius* to assert that the listing of these three potential changes means that these changes and no others are permitted under the Water Code. Camp Pendleton further points to the use of the term "method of diversion" in other areas of the Water Code to support the interpretation that the term's omission in Water Code section 1700 et seq. was intentional. Camp Pendleton cites two State Water Board orders or decisions that interpret the Water Code section as limiting change petitions to the three types of changes enumerated. (State Water Board Order WR 85-4 and State Water Board Decision 1308 (1968).) Camp Pendleton recognizes that the State Water Board exercises broad and continuing authority over existing water rights, including the ability to control and condition water use to protect the public interest and the public trust and to prevent waste. However, Camp Pendleton argues that the State Water Board's authority to approve changes in applications, permits and licenses can be exercised only to protect these state interests, and not for the convenience of the water right holder. Camp Pendleton argues that Water Code § 1700 et seq. is the only Water Code chapter that describes the changes that a *petitioner* may request,[6] and sets these in opposition to the broader State Water Board authority stemming from the principles of waste and reasonable use, and from the duty to protect the public trust.

#### 6.2.1 State Water Board precedent

Camp Pendleton points to State Water Board Order WR 85-4 and Decision 1308 to support its argument that the Board may not accept a change petition involving change from storage to direct diversion or vice-versa. State Water Board Decision 1308 (1968) concerned an application for diversion to storage filed by the United States Bureau of Reclamation (Reclamation). Reclamation already had direct diversion permits authorizing a diversion of up

[5] Camp Pendleton's arguments concerning the captions of these statutes are dismissed, because such headings "do not in any manner affect the scope, meaning, or intent" of Water Code provisions. (Wat. Code, § 6.)

[6] A petitioner may also request changes under Water Code sections 1211, 1398 and 1435, but the existence of these additional sections does not change the argument.

to 350 cubic feet per second throughout the year, and this rate would not have been exceeded in diverting to storage. However, the right was also limited by the amount of water that could be beneficially used at any given point. As the decision noted: "applicant's right under these permits does not entitle it to divert more water than is beneficially used in the authorized manner, which means that these permits do not authorize diversion from Rock Slough into storage even though such diversion is within the authorized rate, quantity, and season." (*Id.* p. 4.) Therefore, the decision went on to evaluate whether unappropriated water was available for the new application, rather than relying on it being available under the existing permit. The decision emphasizes that it is not permissible to expand the amount of water that can be diverted under an existing right, and that the inherent limit of direct diversion rights to what can be applied to beneficial use at that time prevents an additional diversion to storage under the same permit. The decision does not concern a change petition. Nor does it address the situation in which water that would have been directly diverted under the existing right is diverted instead to storage; rather, the case addresses only an expansion of diversion and use.

State Water Board Order WR 85-4 (Order 85-4) addressed the State Water Board's authority to approve a change petition by Madera Irrigation District, which the irrigation district described as a change from direct diversion to diversion to storage. Order 85-4 states:

> If the change is a change in method of diversion, it is not a change which can be made under Water Code § 1700 et seq. However, the permitted direct diversion may be construed as a diversion to storage because of its characteristics.

(*Id.* p. 8.)

Thus Order 85-4 does not ultimately rely on the limited interpretation of potential changes under Water Code section 1700 et seq. The requested change was not actually a change from direct diversion to storage, because the underlying water right already allowed diversion to underground storage. (*Id.* pp. 8-9.) Therefore, the interpretation of Water Code section 1700 et seq. is *dictum*, not a direct holding. While the State Water Board ultimately denied Madera Irrigation District's petition for change, the denial was based on the conclusion that the change would injure another legal user of water. (*Id.* pp. 9-12.)

Neither Order 85-4 nor Decision 1308, however, articulates a rationale for its interpretation of Water Code section 1700 et seq. or addresses the State Water Board's contrary conclusions in a prior State Water Board decision, Decision 940 (D-940), which was issued in 1959. While an administrative agency may change its precedential decisions and the interpretation of its statutes and regulations, its ability to significantly depart from precedent requires reasoned explanation and a "square confrontation" of the prior decision. (*Davida-Bardales v. INS* (1st Cir. 1994) 27 F.3d 1, 5; see also *California Trout v. FERC* (9th Cir. 2009) 572 F.2d 1003, 1023.)

D-940 involved an application for a storage right for two waterways in Madera County. Water users with a claimed pre-1914 appropriative water right protested the application. Originally, the water diverted under this claim had been used by direct diversion, but in 1950 the water right holders built a reservoir and began seasonal storage. The Board noted that there were no California cases directly on point, but reasoned that a change from direct diversion to storage is permissible so long as the rate and season of diversion did not change. (*Id.* pp. 4-5 ["A direct diversion right can be converted to a storage right only to the extent there is no change in the rate of diversion from the stream or in the period of the year during which water is diverted"].) D-940 specifically differentiates this situation from that in which the rate or season of diversion changes, constituting a new appropriation. (*Id.* p. 5.) D-940 found that the protestants had not provided satisfactory evidence of their prior appropriative right because they had changed the season and rate of diversion of their pre-1914 right, which constituted a new appropriation of water for which a water right permit was required. This analysis supported the holding that the protested application would not interfere with prior vested rights. (*Id.* pp. 5-6.)

Other more recent State Water Board decisions have allowed water right holders to petition for changes to direct diversion from storage and vice-versa. For example, State Water Board Decision 1632 (1995) (hereinafter D-1632) dismissed protests to a petition to change a water right application to include direct diversion. The protestants requested that the priority date for this change be set to the date of the requested amendment – in effect charging that such a change creates a new right to which the earlier priority date should not apply. (*Id.* pp. 40-41.) In determining that the protests were invalid, the Board looked to the fact that the new application did not increase the amount of water requested or the diversion season. (*Id.* p. 41.) The Board then issued a permit on the application that allowed both direct diversion and storage. (*Id.* p. 96.) Camp Pendleton argues that D-1632 is materially different from the current situation because the application at issue in D-1632 originally included direct diversion, but had been earlier amended to remove direct diversion. The fact that the original application included direct diversion is immaterial: the application as it stood did not allow direct diversion, but the Board approved the change petition to add direct diversion. The Board did not rely on this history in allowing the change. Camp Pendleton in essence argues that there is an unwritten exception to the normal limits of the Board's authority where a water right holder originally claimed different rights. Taking this argument to its logical conclusion, the Board would be allowed to enlarge water rights, in essence creating new rights, if the amount or season of diversion originally applied for were higher or broader, even though these actions would, under other circumstances, create a new right.

State Water Board Order WR 95-3 approved a change in the rate at which licensee Merced Irrigation District was able to directly divert water for municipal uses. This change was permitted only upon a 1:1 reduction in the rate of diversion to storage under the same right, to ensure that the rate of diversion did not increase, and an analysis that other legal users and public trust uses would be protected. Camp Pendleton seeks to differentiate State Water Board Order WR 95-3 from the current situation, because the original application at issue there provided for both direct diversion and storage, while that at issue here did not. If a change in amount for direct diversion to storage (or vice versa) creates a new right, however, such a change would not be possible within an existing license.

Examining the Board decisions together indicates that none of the decisions after D-940 address prior Board Orders discussing the issue, and that only some of them articulate a rationale for their statements on whether allowing direct diversion or storage is a permissible change to an existing water right. D-940 articulated a principle by which to address whether a change was permissible, or would constitute a new appropriation: it looked to whether there was a change in the rate of diversion from the stream or the season of diversion. Also, the analysis in D-940 directly supported the decision's ultimate holding. The decisions Camp Pendleton cites, Order 85-4 and D-1308, do not mention D-940 or discuss the general principle articulated by D-940. Further, the language regarding changes to add direct diversion or storage to an existing water right is *dictum* in both cases. While well-reasoned *dicta* can be persuasive, the fact that the decisions do not squarely address either the language in or the logic of D-940 weakens the inference that these decisions overruled D-940.

Later, in Order WR 95-3 and D-1632, both issued after Order 85-4 and D-1308, the State Water Board approved changes from storage to direct diversion, provided the changes did not alter the season of diversion or amount of water requested. Both decisions relied on the same reasoning as D-940, and this reasoning was central to the decisions' holdings. However, the State Water

Board again did not squarely confront its prior discussion on the issue. None of the State Water Board's decisions and orders on the issue should be regarded as having overruled, *sub silentio*, prior inconsistent precedent on this issue.

In evaluating these precedents, this order determines that the reasoning in D-940, and affirmed in D-1632, is correct: the State Water Board may make changes in water rights to the extent that these do not initiate a new right, including changes to add direct diversion or storage to a water right. As explained further in Sections 6.2.2, 6.2.3 and 6.3 of this order, this approach is consistent with the language of the Water Code and better promotes important public policies, including the efficient use of waters of the state and protection of public trust uses. The State Water Board disapproves the language in Order 85-4 and D-1308 that suggests a contrary result.

**6.2.2 Interpretation of Water Code sections 1700 et seq**

Camp Pendleton argues that, under the interpretive canon *expressio unius est exclusio alterius*, or "the express mention of one thing excludes others," the authority granted to the State Water Board to accept change petitions for place of use, purpose of use and point of diversion limits the State Water Board to accepting change petitions only for place of use, purpose of use and point of diversion.[7] Camp Pendleton further argues that the canon is strengthened here, because the Water Code explicitly mentions method of diversion in other sections, and does not include it on the list of changes for which a water right holder may petition. *Expressio unius est exclusio alterius* is a rule of interpretation which describes what an expression normally means, not a rule of law that prescribes how a written phrase must be interpreted, and the canon should be applied only where it makes sense in the context of the statute. (*Longview Fibre Co. v. Rasmussen* (9th Cir. 1992) 980 F.2d 1307, 1312-13.)

The *expressio unius* canon of interpretation is most applicable where a newly enacted act has two provisions, drafted with similar language, and one "conspicuously omits" a term. (*U.S. v. Councilman* (1st Cir. 2005) 418 F.3d 67, 74 (citing *Field v. Mans* (1995) 516 U.S. 59, 75-76).) Where a statute mentions a term in one provision that is not included in another, however, the inference that the term's exclusion is purposeful weakens "with each difference in the formulation of the provisions under inspection." (*City of Columbus v. Ours Garage & Wrecker Serv., Inc.* (2002) 536 U.S. 424, 435-6.) Camp Pendleton notes that Water Code sections 100

[7] Camp Pendleton's argument is limited to petitioner-initiated changes.

and 275 mention "method of diversion," and argue that this demonstrates that if the Legislature had intended to include "method of diversion" among the changes the State Water Board may make upon petition of the water right holder, it would have done so. The statutory scheme that mentions "method of diversion" in the referenced Water Code sections, however, is quite different than scheme governing potential changes under Water Code section 1700 et seq. Pursuant to Water Code sections 100 and 275, the State Water Board has authority to prevent the waste, unreasonable use, unreasonable method of use, and unreasonable method of diversion of water. The provisions refer to all water diversion and use, not only appropriations. (See, e.g., *In re Water of Hallett Creek Stream System* (1988) 44 Cal.3d 448, 472 fn. 16 [Water Code section 275 applies to diversion and use under riparian right].) All references to "method of diversion" in the Water Code are in the context of reasonable use: the language is modeled after that in California Constitution article X section 2's prohibition against waste. (See *People ex rel SWRCB v. Forni* (1976) 54 Cal.App.3d 743, 749 fn. 3.) As such, the term "method of diversion" refers to not only whether water is directly diverted or put into storage, but also the point from which it is diverted, the rate at which the diversion occurs, and other features of the diversion facility or its operation. (See, e.g., Revised State Water Board Decision 1644 at p. 95 [fish losses at diversion structure amounted to unreasonable method of diversion]; State Water Board Order WR 90-5 [adopting time schedule for construction of temperature control device, based in part on authority to prevent unreasonable methods of diversion].) The provisions of the Water Code that discuss "method of diversion" do not mention changes in water rights, or use the terms "direct diversion," "storage," "point of diversion," "place of use," or "purpose of use" that are found in the provisions regarding changes to water rights. On the other hand, Water Code sections 1700 - 1705 discuss the specific method for requesting changes in appropriative water rights. The statutory language concerning change petitions uses different terminology than the sections referring to "method of diversion." Because the purposes of and language in these statutory provisions differ, one cannot apply the *expressio unius* canon of interpretation to infer that section 1701 was drafted to deliberately exclude "method of diversion" from potential water right changes. The canon does not afford a reliable method of statutory interpretation in this context.

Moreover, the Water Code expressly recognizes that a petition may be filed to change permit and license conditions other than changes in point of diversion, place of use or purpose of use. Water Code section 1525, subdivision (b), which establishes fees for applications and petitions filed with the State Water Board, establishes fees for petitions "to change the point of diversion, place of use, or purpose of use, under a permit or license," and petitions "to change the conditions of a permit or license, requested by the permittee or licensee, not otherwise subject to [the fees for petitions for changes in point of diversion, place of use, or purpose of use]." (Wat. Code, § 1525, subds. (b)(4) & (5).) Similarly, State Water Board regulations recognize that the Board may consider and approve petitions to change permit or license conditions other than conditions establishing the point of diversion, place of use, or purpose of use. (Cal. Code Regs., tit. 23, § 791, subd. (e).)

State policy dictates that the water resources of the state should be put to beneficial use to the fullest extent possible. (Wat. Code, § 100; see *id.* §§ 104, 105.) Looking at the overall statutory scheme for water appropriation demonstrates that allowing an appropriator flexibility to make changes in water rights beyond those specifically listed in Water Code section 1700 et seq. can be important to the public interest in the waters of the state. While Camp Pendleton characterizes the petitioned-for changes as for the convenience of the permittee or licensee, these changes may further important state policies. Like voluntary transfers, voluntary changes in method of diversion may promote the more efficient or more productive use of the state's limited water resources, so long as adequate safeguards are in place to avoid injury to third party water right holders, unreasonable effects on instream beneficial uses, or interference with other important policies that the water right permit and license system is intended to promote. It may contravene the public interest to deny an appropriator the ability to make changes from storage to direct diversion. For example, it may be contrary to the public interest to deny a change that would allow an appropriator's ability to ensure reasonable continuity of water supply – including the ability to store water for later use or to divert it when needed – where such flexibility would not injure other right holders or the public trust. This is particularly important where, as here, the use is domestic, and the appropriator is a municipality, whose water rights "should be protected to the fullest extent necessary for existing and future uses." (Wat. Code, §§ 106, 106.5.) It would be unreasonable to construe the Water Code to prevent such flexibility merely because the petitioner requests the changes, rather than the Board initiating the process on its own motion.

Limiting potential petitioner-initiated changes to place of use, point of diversion and purpose of use would lead to absurd administrative and procedural results, as well. For example, ownership is a key component of a water right, but one that changes relatively frequently. Under Camp Pendleton's proposed reading, the State Water Board would be unable to change names and contact information for water right holders, because such a change is not specified in Water Code sections 1700 et seq. An inability to correctly identify a right holder would make the State Water Board unable to contact right holders to ensure that their rights are protected and to ensure that their rights are not exceeded. This would hinder the State Water Board's ability to protect existing water right holders and take enforcement against illegal diversions. (See, e.g., Wat. Code, §§ 1825-1845; 1321.)

Adopting Camp Pendleton's *expressio unius* argument would also lead to the conclusion that permittees and licensees cannot petition for changes in permit conditions that do not involve point of diversion, place of use or purposes of use, but instead set requirements based on water quality, the public trust, or the public interest.[8] The State Water Board has routinely considered these changes. (See, e.g., Corrected State Water Board Order WR 2008-0014 [approving changes in permit conditions setting instream flow requirements]; see also State Water Board Order WR 2009-0012, p. 5.) Given the need to respond to changing conditions and the increasing reliance on adaptive management, requiring that all changes to these conditions be initiated by the State Water Board, as Camp Pendleton suggests, would be unworkable. Not only would it create an unnecessary obstacle to voluntary compliance, but the State also would forego opportunities for increased water efficiency or improved protection of public trust resources in cases where the water right holder is willing to make beneficial changes but it is unclear whether the failure to make those changes would be unreasonable or in violation of the public trust. (See generally *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 447 fn. 28 [recognizing but not resolving dispute whether the constitutional prohibition against waste or unreasonable use merely prohibits wasteful or inordinate use, or prohibits any use less than the optimum allocation].)

Thus, an unnecessarily narrow limitation on the types of changes that a water right holder can request would interfere with the State Water Board's overarching responsibilities to administer water rights and to promote the reasonable and beneficial use of California's waters. Interpretations of statutes that contravene an overarching statutory intent, or would lead to absurd results, are to be avoided. (E.g., *People v. Jenkins* (1995) 10 Cal.4th 234, 246.)

[8] While Camp Pendleton's petition expressly recognizes that the State Water Board has broad authority to change water rights to address public trust or waste and unreasonable use concerns, the logical extension of its statutory construction argument would deny petitioners the right to request such changes.

Along with priority, source of water, season of diversion, and amount of diversion, the point of diversion, place of use, and purpose of use are fundamental attributes of an appropriative water right. It is understandable that the Legislature would make express allowance for changes in point of diversion, place of use, and purpose of use, as without this authorization it might be inferred that these fundamental attributes cannot be changed. Moreover, the express authorization of changes to point of diversion, place of use, or purpose of use may be read to imply that the other fundamental attributes of an appropriative right -- the priority, source of water, season of diversion and amount of diversion -- cannot be changed, except where the change amounts to a limitation. Indeed, the principle that a change cannot enlarge the right or amount to initiation of a new right incorporates the view that a permit or license holder cannot petition for an earlier priority, new source, expanded season of diversion or increase in diversion.

It is another matter entirely, however, to read the Water Code's express allowance for changes in some of the fundamental features of an appropriative water right to impliedly exclude changes in other, less fundamental conditions of a water right permit or license. Camp Pendleton's suggestion that these less fundamental conditions may be changed in proceedings initiated by the State Water Board is not merely impractical under current conditions. It fails to explain why the provisions authorizing changes in point of diversion, place of use or purpose of use did not reference other permit and license conditions at the time those provisions were enacted as part of the original Water Commission Act. (Stats. 1913, ch. 586, §§ 12, 39, pp. 1021-1022, 1032.) Under the original Water Commission Act, and for many years thereafter, the State Water Board's predecessor lacked authority to reopen a permit or license on its own motion. (See generally *National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 447 [the role of the State Water Board's predecessor was very limited].) If changes in permit and license conditions could not have been made at the request of permit or license holders, it is unlikely those changes could have been made at all. Nor would it make any sense, where the State Water Board has authority to make changes, to prohibit permit and license holders from petitioning the State Water Board to make those changes.

For these reasons, the Water Code cannot reasonably be interpreted to prohibit petitions for changes permit and license conditions, or to prohibit changes from storage to direct diversion, simply because the changes are not changes in point of diversion, place of use or purpose of use.

### 6.2.3 Interpretation of California Code of Regulations, title 23, section 791, subdivision (e)

California Code of Regulations, title 23, section 791, subdivision (e) states:

> The procedures set forth in Articles 15, 16, 16.5 and 17 shall be followed as nearly as possible when filing and processing petitions for changes in permits and licenses other than changes in point of diversion, place of use and purpose of use.

The regulation anticipates that the State Water Board will accept and process change petitions for changes other than point of diversion, place of use, and purpose of use. Camp Pendleton reads this section to extend only to changes in the "terms and conditions" of water right permits, because regulations may not extend statutory authority and because the State Water Board has relied on this section to make changes to water right terms and conditions. Of course, the permission to store water or use it by direct diversion is a term or condition of a water right. Likewise, for example, a season of diversion, a fish screen requirement, a bypass flow requirement, a place of use or a rate of diversion are water right terms and conditions. It appears that when Camp Pendleton argues that the State Water Board's authority is limited to changes in terms and conditions, it means terms and conditions that do not involve the substantive features of the water right. Nothing in the language of the regulations suggests such an interpretation, and it is unclear how a limitation excluding "substantive features" would apply. Conditions protecting water quality, instream beneficial uses, or the public interest are also substantive. As discussed above, the State Water Board rejects Camp Pendleton's argument that the State Water Board's authority to consider petitions to change permit and license conditions must be interpreted narrowly to avoid conflict with an implied limitation to changes in point of diversion, place of use or purpose of use. This, in turn, undermines Camp Pendleton's suggestion that the regulation exceeds the State Water Board's statutory authority if it extends beyond the non-substantive "terms and conditions" otherwise authorized under the Water Code. Because the regulation refers to processing change petitions, a more straightforward reading of the regulation is that it refers to any other changes that a petitioner may request, which includes a change to add direct diversion or storage.

### 6.3 Public Interest

Camp Pendleton asserts that allowing water right holders to add direct diversion or storage to their water rights would be against the public interest because it would create legal uncertainty and upset existing precedent. As discussed above, administrative precedents do not have the same binding effect as statutes or administrative regulations. The State Water Board ordinarily will follow its precedents, but may refine, reformulate or even reverse its precedents on a case-by-case basis in light of new insights or changed circumstances, so long as it squarely confronts inconsistent precedent and explains its reasons for changing. In this case, the State Water Board has no choice but to make changes from at least some of its prior orders and decisions, because those orders and decisions reflect inconsistent interpretations, and it is in the public interest to issue an order that clarifies the law on this issue.

Camp Pendleton further asserts that allowing a permittee to submit a change petition that conforms a water right to the permittee's actual practice will encourage illegal diversion of water. The State Water Board agrees that "actual conditions should reflect existing water rights." But neither the Water Code nor State Water Board practice establish a general rule that a change will not be permitted under circumstances where the change first occurred without prior authorization and the petitioner is seeking approval after the fact. The State Water Board frequently approves applications or petitions intended to bring existing diversions or uses into compliance. (See, e.g., Revised State Water Board Decision 1641 (2000) at pp. 115-122, 163-166 [approving expansion of the place of use under the water right permits for the Central Valley Project to include lands outside the permitted place of use where service was already being provided]. See also Cal. Code Regs., tit. 23, § 1065, subd. (b) [requiring payment of annual fees on a petition where the change is initiated before the change is approved].) The issue of the appropriate response to activities initiated without prior authorization is largely a question of enforcement, and issuance of an approval later does not immunize the violator from penalties for violations that occurred before the approval. Moreover, the decision whether to take enforcement action is entirely discretionary. (See *Fox v. County of Fresno* (1985) 170 Cal.App.3d 1238, 1242-1244; see also *Citizens for a Better Environment – Cal. v. Union Oil Co. of Cal*. (9th Cir. 1996) 83 F.3d 1111, 1119-1120.) In these circumstances, it would not be appropriate to adopt a general rule that amounts to a nondiscretionary punitive sanction, making those who initiate changes without first obtaining approval ineligible for approval even after they go through the approval process.

Absent such a general rule, the public interest in issuing a permit that conforms a water right to an existing use must be independently weighed in each individual case. Camp Pendleton provided no information specific to the City of Santa Cruz's water rights in this regard, and also provided no substantiation of the claim that approving individual petitions that conform a water right to an existing use would encourage future illegal diversions. The State Water Board requested that Camp Pendleton supplement its public interest assertions in the April 29, 2009, letter from Deputy Director Victoria Whitney to Ralph E. Pearcy, and Camp Pendleton declined to do so.

## 7.0 CONCLUSION

The State Water Board may receive and process change petitions that add direct diversion or storage to a water right, subject to the "no injury" rule and any conditions necessary to protect public trust uses and the public interest, provided there is no increase in the rate or season of diversion. Camp Pendleton's request for reconsideration is therefore denied.

## ORDER

**IT IS HEREBY ORDERED** that the petition for reconsideration is denied.

## CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on December 1, 2009.

AYE: Chairman Charles R. Hoppin
Vice Chair Frances Spivy-Weber
Board Member Tam M. Doduc
Board Member Arthur G. Baggett, Jr.
Board Member Walter G. Pettit

NAY: None

ABSENT: None

ABSTAIN: None

Jeanine Townsend

Jeanine Townsend
Clerk to the Board

**BARTKIEWICZ, KRONICK & SHANAHAN**

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May 16, 2021

Ms. Gina R. Nicholls
Nossaman LLP
777 South Figueroa Street, 34th Floor
Los Angeles, CA 90017

VIA E-MAIL AND U.S. MAIL
gnicholls@nossaman.com

Re: City of Santa Cruz's Petitions for Change and Extension of Time – Response to San Lorenzo Valley Water District Protest

Dear Ms. Nicholls:

This letter is the City of Santa Cruz's response to the San Lorenzo Valley Water District's (SLVWD) March 12, 2021 letter that SLVWD submitted to the State Water Resources Control Board (SWRCB) as a protest of the City's pending water-right petitions. The City appreciates SLVWD's attention to the City's petitions and has carefully analyzed the issues raised in SLVWD's protest. As discussed below, the City believes that it should be possible to resolve SLVWD's protest collaboratively, consistent with the two water suppliers' broader relationship.

*1. Loch Lomond Water*

The City understands SLVWD's concern about its access to water from Loch Lomond Reservoir. It has never been the City's intent in developing and submitting the pending water-right petitions to deny SLVWD access to water from Loch Lomond consistent with the relevant contract between the City and SLVWD. As the City's forthcoming draft EIR will indicate, the City has assumed that 313 acre-feet a year of water from Loch Lomond would be available to SLVWD. Accordingly, to resolve this aspect of SLVWD's water-right protest, the City is amenable to including, in an SWRCB order approving the City's petition to change its license for diversions at Newell Creek Dam and Loch Lomond Reservoir (License 9847), the following term:

> This license's minimum streamflow requirements, and limitations on deliveries to other entities outside of the City of Santa Cruz's service area, will not preclude the City from delivering up to 313 acre-feet per year under this license to San Lorenzo Valley Water District, pursuant to an existing contract between that District and the City.

Please let me know at your soonest convenience whether this term is acceptable to SLVWD as a basis for resolving the portion of its protest concerning Loch Lomond water.

*2. Streamflows Below Felton*

SLVWD's protest also states concerns about how the City's proposals to modify the San Lorenzo River bypass flows that apply under its Felton permits (Permits 16123 and 16601) could affect SLVWD's use of its water rights. SLVWD's protest suggests that, if the City's proposed Felton bypass flows were to be applied to SLVWD's water rights, then SLVWD's water supplies might be affected. SLVWD's protest also requests that processing of the City's pending petitions be delayed while SLVWD works on potential water-right changes of its own.

Preliminarily, the City is not proposing changes to SLVWD's water rights. The City further understands SLVWD's concerns to be based on term 13 in SLVWD's Permit 20123. That terms reads as follows (omitting paragraph breaks):

> Permittee [SLVWD] may divert water under this permit only when flow in the San Lorenzo River below the Felton Diversion Weir exceeds the following amounts: a. September – 10 cubic feet per second; b. October – 25 cubic feet per second; c. November 1 through May 31 – 20 cubic feet per second.

Term 13's broader context is that SLVWD's multiple water-right permits and licenses involve diversions from the San Lorenzo River's watershed upstream of the City's Felton diversion. While Permit 20123's term 13 currently ties SLVWD's ability to divert to streamflows below the City's Felton diversion, in the future, the City may be able to agree that the point at which minimum streamflows would be measured under SLVWD's water rights could be moved upstream. The City's ability to agree to such a change would depend on the change having no adverse effects to the City's water supplies or the San Lorenzo River watershed's listed coho salmon and steelhead. Accordingly, as SLVWD advances its proposals as described in its protest letter, the City assumes that SLVWD will ensure that whatever changes to its water rights, or other water management measures, SLVWD proposes will ensure that listed fish and the City's water supplies are not adversely affected.

Based on this background, the City would like to assure SLVWD that its pending water-right petitions are not intended to reduce or otherwise negatively impact SLVWD's rights under Permit 20123. The City instead developed the proposed streamflow requirements contained in these petitions – including the proposed new Felton bypass flows – in cooperation with the California Department of Fish and Wildlife and the National Marine Fisheries Service in order to ensure that the City's water-supply operations are protective of listed coho salmon and steelhead. Because the proposed new Felton bypass flows would significantly increase flows at that location, the City's implementation of those proposed requirements will not have any adverse effects on SLVWD under Permit 20123's term 13. The City's petitions to change its Felton permits (Permits 16123 and 16601) therefore would not injure SLVWD as a legal user of water. SLVWD's concerns that the City's proposed changes to its Felton bypass-flow requirements under those might adversely affect SLVWD's water supplies, if SLVWD's Permit 20123 were subjected to those same requirements, therefore do not present valid grounds for a water-right protest.

In light of the collaborative relationship between the City and SLVWD, however, the City would like to resolve amicably the portion of SLVWD's protest concerning Felton streamflows. The City therefore would be amenable to recognizing SLVWD's interest in potentially modifying the point at which minimum streamflows are measured under SLVWD's Permit 20123, assuming that SLVWD similarly recognizes the City's interest in ensuring that proposals by SLVWD will not adversely affect the City's water supplies. Accordingly, in order to resolve SLVWD's water-right protest, the City would be willing to sign a binding protest-resolution agreement containing the following term:

> The City of Santa Cruz acknowledges that the minimum Felton bypass flows stated in this permit are not a binding precedent for Term 13 in San Lorenzo Valley Water District's Permit 20123. The City will consider, in good faith, proposals by the District to change the compliance point for minimum streamflows in Permit 20123 from the Felton diversion, based on a demonstration by the District that its proposal to modify that compliance point, and any other associated plans or proposals of the District, will not adversely affect the City's water supplies.

That agreement would require SLVWD to withdraw its protest promptly on the agreement's execution. That agreement also would incorporate the proposed permit term concerning Loch Lomond discussed above.

Please let me know at your soonest convenience whether this term is acceptable to SLVWD as a basis for resolving the portion of its protest concerning Felton streamflows.

*3. Conclusion*

The City values its relationship with SLVWD and hopes to cooperatively resolve SLVWD's water-right protests in the spirit of advancing integrated management of the region's available surface-water and groundwater supplies. We look forward to discussing with you a resolution of SLVWD's protests. Please do not hesitate to contact me if you have any questions.

Kind regards,

Ryan S. Bezerra

Attorneys for City of Santa Cruz

RSB:
Response to SLVWD water-right protest 2021-05-06

Cc (via e-mail): State Water Resources Control Board,
Division of Water Rights
Attn: Jane Ling
P.O. Box 2000
Sacramento, CA, 95812-2000
Jane.Ling@waterboards.ca.gov

allow as credit for the succeeding year's purchase any sums which PURCHASER may have overpaid for the year in question.

IT IS AGREED by and between the parties hereto that this agreement shall become effective and PURCHASER shall be entitled to receive such water at existing points of diversion upon ten days written notice of intention to receive water delivered by PURCHASER to SELLER and that PURCHASER may terminate this agreement and supply of water at will at which time SELLER agrees to determine the actual cost of production of water furnished under the contract at the end of the fiscal year and remit at that time any credit and be entitled to payment of any balance that may be due therefor.

WITNESS OUR HANDS in the County of Santa Cruz the 26th day of September, 1962.

CITY OF SANTA CRUZ

By [signature]
City Manager Pro Tem

SAN LORENZO VALLEY COUNTY WATER DISTRICT

By [signature]
Chairman

[signature]
Secretary

Approved as to form this

2 day of August, 1962.

[signature]
City Attorney

# Appendix C

## Minimum Instream Flow Requirements (Agreed Flows)

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# SANTA CRUZ WATER RIGHTS PROJECT MINIMUM INSTREAM FLOW REQUIREMENTS (AGREED FLOWS)

PREPARED FOR:

**SANTA CRUZ WATER DEPARTMENT**

PREPARED BY:

**DUDEK**

&

**HAGAR ENVIRONMENTAL SCIENCE**

JUNE 2021

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## TABLES



## ATTACHMENTS

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# 1 INTRODUCTION

## 1.1 Report Purpose

The purpose of this report is to provide necessary supporting information about the instream flow requirements (Agreed Flows) that the City of Santa Cruz (City) has negotiated with the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) as part of the development of a pending Anadromous Salmonid Habitat Conservation Plan (ASHCP) (City of Santa Cruz 2021). The pending ASHCP will provide for California Endangered Species Act (CESA) and Federal Endangered Species Act (ESA) compliance for City operation and maintenance activities that may affect special-status anadromous salmonids, specifically the Central California Coast coho salmon (coho) (*Oncorhynchus kisutch*), a federally and state listed endangered species, and the Central California Coast steelhead (steelhead) (*Oncorhynchus mykiss*), a federally listed threatened species.

## 1.2 Relationship to Santa Cruz Water Rights Project

The Santa Cruz Water Rights Project (Proposed Project) would include modifying City water rights to incorporate the Agreed Flows into both pre-1914 rights on the North Coast streams and post-1914 permits and licenses on the San Lorenzo River and Newell Creek to improve instream habitat and flow conditions for coho and steelhead. While it is expected that Agreed Flows will be further codified through the ASHCP process and a Streambed Alteration Agreement with CDFW, the Proposed Project would commit the City to these flows regardless of the outcomes of these processes.

## 1.3 Report Contents

The report provides background on the pending ASHCP relevant to the Agreed Flows, discusses the process of developing the Agreed Flows, provides the Agreed Flows tables and measures, and compares the Agreed Flows to the interim bypass flows requirements agreed to by CDFW and the City as part of an April 2018 agreement between these two entities (see Attachment 1). This document was developed based on the administrative draft ASHCP prepared by the City of Santa Cruz.

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# 2 HABITAT CONSERVATION PLAN BACKGROUND

The City has applied for an incidental take permit (ITP) from NMFS pursuant to section 10(a)(1)(B) of the ESA, as amended (16 U.S.C. 1531 *et seq.*) to incidentally take the federally threatened Central California Coast steelhead *(Oncorhynchus mykiss)* and federally endangered Central California Coast coho *(Oncorhynchus kisutch)*. The ESA prohibits the unauthorized "take"[1] of a wildlife species that is listed as endangered or, if the necessary regulations have been adopted, for threatened species. The ASHCP and ITP would provide incidental take permit coverage for a wide range of City activities called "Covered Activities". These Covered Activities include operation, maintenance and repair of the City's water supply and water system facilities; operation and maintenance of the City's municipal facilities; and management of City lands. The City is requesting that the ESA section 10(a)(1)(B) permit be issued for a period of 30 years.

The ASHCP, developed in close coordination with NMFS and the CDFW over a thirteen-year period, provides the basis for the issuance of an incidental take permit under the ESA. This HCP further provides the basis for issuance of an incidental take permit under Section 2081(b) of the CESA.

## 2.1 Plan Area

The area covered by this HCP (Plan Area) is located on the central coast of California in Santa Cruz County, approximately 70 miles south of San Francisco. The Plan Area is contained on the Davenport, Santa Cruz and Felton U.S. Geological Survey 7.5-minute quadrangles. The total watershed and water service/urban areas within the Plan Area are approximately 176 square miles and include three geographically distinct areas: the North Coast Unit, the San Lorenzo River Unit, and the City Urban Center Unit, as well as the water service areas outside the City limits.

## 2.2 Covered Species

### Steelhead (*Oncorhynchus mykiss*)

Steelhead inhabiting the drainages within the Plan Area are part of the Central California Coast Distinct Population Segment (DPS) listed as threatened under the federal ESA (NMFS 2006). The California Coast DPS consists entirely of winter-run steelhead and extends from the Russian River south to and including Aptos Creek in the southern end of Santa Cruz County. The Plan Area includes streams that are located in the critical habitat designation for CCC Steelhead (NMFS 2005a).

[1] "Take" includes various activities that may result in injury or death of a species, including habitat modification.

Steelhead life history is diverse and adaptive, providing the flexibility to survive in varied environmental conditions naturally occurring through their range and within their natal watershed. In general, steelhead grow and mature in the ocean and spawn in freshwater. In central California, adult steelhead enter coastal streams during the wet season in association with increased runoff. The majority of steelhead enter freshwater from December through March or April, and spawn relatively soon after entering freshwater. Spawning frequently occurs in the tail-end of pools, glides, or runs where the female buries her eggs in pockets (or redds) excavated in a gravel-cobble substrate (Shapovalov and Taft 1954). The length of time it takes eggs to hatch is dependent on water temperature with hatching in about 30 days at 51°F and longer at cooler temperatures. Embryos remain in gravel until they are fully developed and ready to begin feeding, then young steelhead (or fry) typically disperse to the stream margins in close vicinity of the redd. As the fish grow, they move to areas with more suitable feeding and hiding conditions (e.g., heads of pools, pocket water, etc.).

Juvenile steelhead can spend 1 to 3 years in freshwater before beginning physiological processes that prepare them for life in seawater (known as smoltification). Steelhead begin the process of smoltification most commonly at a size of 150-200 mm (6 to 8 inches) and migrate downstream to the ocean as early as the fall, but most commonly in the spring (March - May). Steelhead may spend 1 to 2 years in the ocean before reaching maturity and returning to the natal stream to spawn (Shapovalov and Taft 1954).

Steelhead are unusual among the Pacific salmonids because they do not necessarily die after spawning. After spawning, some of these fish, called kelts, remain in fresh water for a short period of time, then return to the ocean (Barnhart 1986). Steelhead are also unusual in that they have several life history strategies. Young steelhead produced from common parents have the capability of following distinctly different forms. Some may remain in freshwater even when the ocean is readily available. These fish can reach sexual maturity and spawn without ever entering the ocean and are also known as rainbow trout. Furthermore, the progeny of these “resident” spawning fish can produce young that assume an anadromous life history and leave the freshwater environs as juveniles to grow and mature in the ocean before returning to spawn. This life history variability provides greater potential for population persistence, especially in areas with episodic periods of prolonged drought that can prevent fish from entering or leaving the stream for several generations (Titus et al. *In prep*.).

Steelhead populations in the North Coast streams are relatively small due to the short lengths of anadromous habitat. Suitable rearing habitat exists in the coastal streams; however, the extent of this habitat is limited by the presence of natural barriers to upstream passage. Sedimentation is also high in these streams, which affects the amount of spawning habitat (embedding gravels), the amount of rearing habitat (infilling pools), and production of salmonid food.

Additionally, available analyses suggest that steelhead have declined in the Central California Coast DPS and in the San Lorenzo River from historic levels. The primary factors limiting salmonid production in the San Lorenzo River watershed are related to excessive accumulation of fine sediments in rearing and spawning habitat, reductions in streamflow during critical life history phases, impediments to adult passage, and inhospitable water temperature conditions (Alley et al. 2004, Ricker and Butler 1979).

## Coho (*Oncorhynchus kisutch*)

In the Plan Area, coho are part of the Central California Coast ESU, which is listed as endangered under the FESA. The Central California Coast ESU extends from Punta Gorda in Humboldt County south to, and including, Aptos Creek (NMFS 2005b). Critical habitat has been designated for the Central California Coast ESU and includes the accessible portions of the streams in the Plan Area.

Central California represents the southern margin of the species' natural distribution, and coastal streams of Santa Cruz County constitute the southernmost extent of coho distribution. In Santa Cruz County, historically coho are believed to have used Gazos, Waddell, Scott, San Vicente, Soquel, and Aptos creeks and the San Lorenzo River (CDFW 2003). During surveys from 2000-2002, coho were found in Gazos, Waddell and Scott creeks.

Coho spawning migrations from the ocean to freshwater streams and rivers usually begin after the first heavy rains in late fall or winter. The timing of their migration varies somewhat throughout their range, but coho typically return to fresh water during November through February in Central California, with a peak in December and January. Females construct redds, typically near the head of a riffle in gravel and small cobble substrate. The female may dig several pits to complete spawning, probably laying a few hundred eggs in each pit.

Newly hatched fry (embryos) remain in the gravel for approximately 3 weeks before emerging and schooling in still, shallow water along stream margins. As they grow during the spring, juvenile coho disperse to pools where they set up individual territories. After spending the ensuing summer, fall and winter in the stream, the immature yearling coho begin to migrate downstream toward the ocean in spring. During this time, juveniles undergo smoltification. Growth in freshwater varies with a number of factors, but typically smolts leaving California streams as "yearlings" (12-15 months old) measure 8 to 15 centimeters (cm). Some juveniles may achieve even larger sizes before emigration by staying 2 years in the stream (Moyle 2002). Migration to the ocean typically peaks from late April to mid-May if conditions are favorable (Moyle 2002). After entering the ocean, immature coho initially remain inshore, close to the parent stream. Gradually, they spread out, over the continental shelf, where they grow much more rapidly than in the stream.

California coho have a 3-year life cycle with little variation. About half is spent in freshwater and half spent in salt water. After 2 summers of growing and sexually maturing in the ocean, coho return to their natal streams as 3-year-olds to spawn and die.

Freshwater habitat requirements for coho include adequate cover, food supply, and optimal water temperatures of 54°-57°. Coho primary habitat includes pools with extensive cover. The factors most limiting to juvenile coho are high summer water temperatures, poor summer and winter habitat quality, and predation (Moyle 2002).

Central California represents the southern margin of the species' natural distribution, and coastal streams of Santa Cruz County constitute the current southernmost extent of coho distribution (NMFS 2016c). Historically, coho were found in as many as 50 coastal drainages in San Mateo and Santa Cruz counties but spawning runs were limited to 11 stream systems by the 1960's (Anderson 1995). More recently, the two independent populations in the Santa Cruz Mountain diversity strata (Pescadero Creek and San Lorenzo River) were considered likely extirpated in the last NMFS 5-year status review (NMFS 2016). Factors limiting coho in Santa Cruz County include high summer temperatures; extreme hydrologic variability typical of the Central California Coast that results in frequent droughts, low flows for early upstream passage during November and December, which is critical for coho, and excessively high flood flows that are destructive to redds during late winter and early spring; and the narrow and early coho spawning season and inflexible coho life history that subject the coho to catastrophic losses on a frequent basis and provide little ability to rebound during brief periods of more suitable conditions. In addition, the high sedimentation levels and lack of pool development in many of the streams are at least as limiting for coho as for steelhead.

## 2.3 Conservation Strategy

The conservation strategy was developed from the City's review of available data and literature on the species and extensive field data collection, including the status and features of populations and habitat conditions within each stream. The City coordinated closely with NMFS and CDFW to address research methodologies and results, and develop the conservation strategy. The primary focus of the City's conservation strategy is to avoid or minimize existing and potential effects of Covered Activities to maximum extent practicable. The avoidance and minimization measures define specific tools and techniques and measurable steps to meet HCP objectives and achieve desired future conditions. The avoidance and minimization measures may involve the removal of an activity from a particular location or the scheduling of an activity to occur during a period in which the species is unlikely to be affected. Avoidance and minimization measures may also apply constraints or limitations on an activity that allow it to proceed while avoiding or minimizing effects to species.

A major element of the conservation strategy involved identification of instream flows (Agreed Flows) at City diversions to minimize the effect of diversions on habitat conditions for steelhead and coho. The conservation strategy specifies Agreed Flows for each of the City's sources that would be maintained through flow bypasses at the City diversions. Agreed Flows and the strategy for implementing them are described in detail in Section 3.

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# 3 AGREED FLOWS

## 3.1 Agreed Flows Development Process

Early work in developing the HCP focused on understanding the relationship between flow and habitat quality downstream of each diversion. The goal was to develop instream flow targets through an iterative process that considered both the habitat values of instream flows as well as the ability of the City to meet its water supply obligations. Instream flow alternatives were modeled using the City's water supply operations model (Confluence® Model) to understand the effect of various flow alternatives on the City's water supplies (see Appendix D-2 for additional information about this model). The City also developed a fisheries habitat-based model to analyze the effect that the various flow alternatives would have on covered species habitat (see Appendix D-3 for additional information about this model). This process was the combined effort of a technical working group convened by the City beginning in 2005 and composed of resource agency personnel representing NMFS and CDFW, City staff, and consultants.

The City submitted a proposal for instream bypass flows and other conservation measures in June 2012 to the technical working group (City of Santa Cruz 2012). CDFW responded to this proposal with comments and proposed modifications to the flow proposal (CDFW 2012). The City worked to resolve comments provided by CDFW and completed modeling studies of several iterations of the CDFW proposal that ultimately became the proposal known as DFG-5. In 2014, the City Council convened a Water Supply Advisory Committee (WSAC) to engage a multi-disciplinary, stakeholder-driven process that would advise the Council on future water supply development.

Based on the information developed through field studies and iterative model runs, the WSAC convened by the City recommended that the City adopt the flow alternative that was the most protective of the covered species (CDFW DFG-5) and develop new water supply strategies that would make it practicable for the City to provide the flows for Covered Species while meeting its water supply obligations. DFG-5 provided the basis from which the final bypass flows were negotiated by the City, NOAA, and CDFW, and adopted with minor modifications.

## 3.2 Agreed Flows Measures and Tables

The Agreed Flows comprise a schedule of instream flows (bypass flows) that would avoid and minimize effects on steelhead and coho due to operation of the Laguna Creek, Liddell Spring, Majors Creek, Tait and Felton Diversions, as well as the Loch Lomond Reservoir. The Agreed Flows are those flows needed to maintain habitat for steelhead and coho during all freshwater life stages (migration, spawning, incubation, and rearing) over a range of Hydrologic Condition Types (see Table 1). The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (October 1–September 30) at the Big Trees gage on the San Lorenzo River. To develop the Hydrologic Condition Types, cumulative flow was calculated for each month in the record (water years 1937–2015), sorted from lowest to highest, and split into five equal parts representing a range of hydrologic conditions from driest to wettest conditions. Operationally, the Hydrologic Condition Type would be determined each month based on conditions for the preceding month, and the bypass flows would be established based on the month and hydrologic condition as described in Table 1.

**Table 1. Agreed Flows Hydrologic Condition Types**

| Month | Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2] | | | | |
|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (wettest)* |
| Oct | ≤459 | 460 – 539 | 540 – 709 | 710 – 875 | >875 |
| Nov | ≤1,186 | 1,187 – 1,497 | 1,498 – 1,827 | 1,828 – 2,485 | >2,485 |
| Dec | ≤2,397 | 2,398 – 3,134 | 3,135 – 5,642 | 5,643 – 10,196 | >10,196 |
| Jan | ≤4,322 | 4,323 – 8,456 | 8,457 – 16,694 | 16,695 – 28,019 | >28,019 |
| Feb | ≤8,442 | 8,443 – 16,368 | 16,369 – 29,140 | 29,141 – 42,995 | >42,995 |
| Mar | ≤13,004 | 13,005 – 22,948 | 22,949 – 35,371 | 35,372 – 57,968 | >57,968 |
| Apr | ≤14,203 | 14,204 – 24,491 | 24,492 – 39,487 | 39,488 – 67,884 | >67,884 |
| May | ≤15,448 | 15,449 – 25,279 | 25,280 – 41,659 | 41,660 – 71,412 | >71,412 |
| Jun | ≤16,005 | 16,006 – 26,116 | 26,117 – 43,123 | 43,124 – 73,420 | >73,420 |
| Jul | ≤16,364 | 16,365 – 26,819 | 26,820 – 44,073 | 44,074 – 74,718 | >74,718 |
| Aug | ≤16,653 | 16,654 – 27,355 | 27,356 – 44,799 | 44,800 – 75,591 | >75,591 |
| Sep | ≤16,978 | 16,979 – 27,843 | 27,844 – 45,398 | 45,399 – 76,368 | >76,368 |

**Notes:** cfs = cubic feet per second.

1 The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.

2 To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.

a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.
b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.
c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

As indicated in Section 1.2, the Proposed Project would include modifying City water rights to incorporate the Agreed Flows the City negotiated with CDFW and NMFS during development of the pending ASHCP to better protect federally listed coho and steelhead in all watersheds from which the City diverts water. The Agreed Flows would be incorporated into both pre-1914 rights on the North Coast streams and post-1914 permits and licenses on the San Lorenzo River and Newell Creek to improve instream habitat and flow conditions for these fish species. Specific flow measures and tables that encompass the Agreed Flows are also provided. A measure that all diversions share in common is to limit operational flow reductions such that change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at other times.

## Laguna/Reggiardo Creek Diversion

The technical working group assigned Laguna Creek a high priority for restoration of flows relative to the other North Coast streams covered in the HCP due to underlying habitat conditions that have a higher potential to support recovery of salmonids. It is the largest watershed and has the longest reach of anadromous habitat of all the North Coast streams where the City diverts water. It also has a nearly intact lagoon system that can be very productive for steelhead. Laguna Creek also has the potential to support coho as evidenced by recent observations of juveniles there.

A schedule of instream flow targets to minimize effects of the Laguna/Reggiardo Diversion is presented in Table 2 and described as specific measures as follows. The numbers for the measures are from the ASHCP, so those numbers are not consecutive, and not all numbered ASHCP measures appear in this appendix, as not all measures are applicable to the Proposed Project and associated Agreed Flows.

The instream flow targets in Table 2 apply to the City-maintained stream gage in the anadromous reach of Laguna Creek, a short distance upstream of State Highway 1. The point of diversion is approximately 4 miles upstream of the anadromous gage and there is accretion of flows from other sources including Y Creek. Although the point of compliance is at the anadromous gage, other gages will also be used to ascertain effects of these other diversions on flows and habitat availability in the anadromous reach.

**Measure WS-8:** Provide 2 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Laguna Creek at all times. This is approximately the 44% exceedance flow for August in the historical hydrologic record and equates to about 70% of the maximum habitat index for steelhead rearing in August in the reach and approximately 99% of the maximum habitat index for coho rearing.

**Measure WS-9:** Provide minimum bypass flows for adult migration in the anadromous reach with a lower flow threshold of 10.6 cfs and an upper threshold of 15.5 cfs in December through March of all hydrologic conditions and April when hydrologic condition is 0-60% whenever flow would be at this level without City diversions.

**Measure WS-10:** Provide minimum bypass flows for spawning in the anadromous reach of 9.4 cfs during December through May for 14 days following any adult migration period (providing 80% of peak habitat index for steelhead spawning and 97% of the peak for coho).

**Measure WS-11:** Provide bypass flows for egg incubation in January through May in all hydrologic conditions. The incubation flow in Laguna Creek is 4.0 cfs. Incubation flows are provided for 60 days after the last spawning day or until May 30, whichever is earliest.

**Measure WS-12:** Provide bypass flows for smolt migration in the anadromous reach during January through May in 0-80% hydrologic conditions (hydrologic conditions 1-4), and for at least 3 consecutive days per week in 80%-100% conditions (hydrologic condition 5). The smolt migration minimum is 3.8 cfs. For background on the various hydrologic conditions, see Appendix 8: *Anadromous Salmonid HCP Models*.

**Table 2. Agreed Flows for Laguna Creek Diversion, as Measured at the Laguna Creek Anadromous Gage[1]**

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration (cfs) | Spawning[2] (cfs) | Egg Incubation[3] (cfs) | Smolt Out-migration[4] (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | 4.0 | 3.8 |
| Feb | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | 4.0 | 3.8 |
| Mar | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | 4.0 | 3.8 |
| Apr | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5[5] | 9.4 | 4.0 | 3.8 |
| May | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | 9.4 | 4.0 | 3.8 |
| Jun | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Jul | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Aug | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Sep | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Oct | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Nov | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | — | — | — | — |
| Dec | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 11.3/15.5 | 9.4 | — | — |

**Notes**: cfs = cubic feet per second.
1 The required flow is determined by the life stage requiring the highest flow in any given month.
2 Provided for 14-day period after any potential migration event.
3 Provided for 60 days following occurrence of last spawning flow or May 31, whichever occurs first.
4 Provided in Hydrologic Conditions 1–4 and for 3 consecutive days per week in Hydrologic Condition 5 in March, April, and May.
5 April adult migration flows provided in Hydrologic Conditions 1–3.

## Liddell Spring Diversion

Restoration of flow in Liddell Creek was given lower priority than Laguna Creek and the San Lorenzo River due to limited productive capacity for steelhead, lower suitability of habitat for coho, relatively short anadromous length, and relatively small size of the diversion relative to Laguna Creek and the San Lorenzo River. Productive capacity is limited due to excessive amounts of fine sediment and lack of a functional lagoon.

The instream flow targets in Table 3 apply to the City-maintained stream gage in the anadromous reach of Liddell Creek, a short distance upstream of Highway 1. The point of diversion is offstream from a point approximately 2 miles upstream of the anadromous gage and there is accretion of flows from other sources including the Middle Branch and West Branch of Liddell Creek. There are also other diverters in the watershed including the former CEMEX quarry, numerous wells in the recharge area for the creek, two alluvial wells near the confluence of the West and East Branches owned by the Coast Dairies and Land Co., and an agricultural diversion just upstream of Highway 1. The magnitude and timing of other diversions is not known with any certainty and cannot be predicted. The point of compliance is at the Anadromous Liddell gage; other gages will also be used to ascertain effects of these other diversions on flows and habitat availability in the anadromous reach.

The applicable conservation measures from the ASHCP are below. Their numbers are not consecutive, and not all numbered ASHCP measures appear in this appendix, as not all measures are applicable to the Proposed Project and associated Agreed Flows.

**Measure WS-1:** Provide 0.25 cfs minimum bypass flow for rearing juvenile steelhead in Liddell Creek in the two driest hydrologic conditions (80%-100% exceedance and 60%-80% exceedance).

**Measure WS-2:** Provide up to 5.2 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Liddell Creek in normal, wet, and very wet hydrologic conditions (0%-60% exceedance). This provides approximately 76% of the maximum habitat index for steelhead rearing in the reach.

**Measure WS-3:** Provide minimum bypass flows for adult migration in the anadromous reach in December through April of 0%-60% hydrologic conditions with a lower flow threshold of 4.9 cfs and an upper threshold of 11.3 cfs whenever flow would be at this level without City diversions.

**Measure WS-4:** Provide minimum bypass flows for spawning in the anadromous reach in December through May of 0%-60% hydrologic conditions of 7.4 cfs for 14 days following any adult migration period (provides estimated 80% of peak habitat index for steelhead spawning and 97% of the peak for coho).

**Measure WS-5:** Provide bypass flows for egg incubation in January through May of 0%-60% hydrologic conditions. The incubation flow in Liddell Creek is 2.0 cfs. Incubation flows are provided for 60 days after the last spawning day or until May 30, whichever is earliest.

**Measure WS-6:** Provide bypass flows for smolt migration in the anadromous reach during January through May in 0-60% hydrologic conditions (hydrologic conditions 1-3), and for at least 3 consecutive days per week in March, April, and May in 60%-100% conditions (hydrologic conditions 4 and 5). The smolt migration minimum is 2 cfs.

**Table 3. Agreed Flows for Liddell Spring Diversion, as Measured at the Liddell Creek Anadromous Gage[1]**

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[4] (cfs) | Smolt Out-migration[5] (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 0.25 | 0.25 | 2.9 | 3.6 | 4.7 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| Feb | 0.25 | 0.25 | 4.6 | 3.9 | 5.1 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| Mar | 0.25 | 0.25 | 3.5 | 4.8 | 5.2 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| Apr | 0.25 | 0.25 | 3.0 | 4.3 | 4.6 | 4.9/11.3 | 7.4 | 2.0 | 2.0 |
| May | 0.25 | 0.25 | 2.6 | 3.3 | 4.0 | — | 7.4 | 2.0 | 2.0 |
| Jun | 0.25 | 0.25 | 2.0 | 2.4 | 2.9 | — | — | — | — |
| Jul | 0.25 | 0.25 | 1.6 | 1.9 | 2.2 | — | — | — | — |
| Aug | 0.25 | 0.25 | 1.4 | 1.7 | 1.8 | — | — | — | — |
| Sep | 0.25 | 0.25 | 1.3 | 1.5 | 1.6 | — | — | — | — |
| Oct | 0.25 | 0.25 | 1.5 | 1.5 | 1.6 | — | — | — | — |
| Nov | 0.25 | 0.25 | 1.8 | 1.9 | 1.9 | — | — | — | — |
| Dec | 0.25 | 0.25 | 2.1 | 2.6 | 3.0 | 14.9/11.3 | 7.4 | — | — |

**Notes**: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.
2 Provided in Hydrologic Conditions 1–3 only.
3 Provide for 14-day period after any potential migration event in Hydrologic Conditions 1–3.
4 Provided in Hydrologic Conditions 1–3 for 60-day period following occurrence of last spawning flow or May 31, whichever occurs first
5 Provided in Hydrologic Conditions 1–3, and for 3 consecutive days per week in March, April, and May in Hydrologic Conditions 4–5.

## Majors Creek Diversion

Restoration of flow in Majors Creek was given lower priority than Laguna Creek and the San Lorenzo River due to the short anadromous reach length of about 0.7 miles and absence of a developed lagoon. It also has a relatively small diversion capacity of 2.1 cfs, relative to Laguna Creek at 6.3 cfs and the San Lorenzo River at Tait St at 12.2 cfs. A schedule of instream flow targets to minimize effects of the Majors Creek diversion is presented in Table 4 and described as specific measures as follows.

The instream flow targets in Table 4 apply to the City-maintained stream gage in the anadromous reach of Majors Creek, immediately upstream of State Highway 1. The point of diversion is approximately 2 miles upstream of the anadromous gage and there is accretion of flows in the intervening reach. There are at least four known non-City operated diversions on Majors Creek (ENTRIX, Inc. 2004c) including three diversions operated by Edwards, two of which are located in the anadromous reach just upstream of the Highway 1 crossing. There are also several diversions upstream of the City diversion (Chris Berry, personal communication to Kindra Loomis, 2004, cited in ENTRIX, Inc. 2004c). Production numbers and season of diversion for the non-City diversions are unavailable and their impacts on Majors Creek hydrology are unclear. The point of compliance is at the anadromous gage; other gages will also be used to ascertain effects of other diversions on flows and habitat availability in the anadromous reach.

The applicable conservation measures from the ASHCP are below. Their numbers are not consecutive, and not all numbered ASHCP measures appear in this appendix, as not all measures are applicable to the Proposed Project and associated Agreed Flows.

**Measure WS-14:** Provide 0.25 cfs minimum bypass flow for rearing juvenile steelhead in Majors Creek in the two driest hydrologic conditions (80%-100% and 60%-80%).

**Measure WS-15:** Provide up to 4.7 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Majors Creek in normal, wet, and very wet hydrologic conditions (0%-60%). This is more than the maximum August flow and approximately the 10% exceedance flow for June in the historical hydrologic record and equates to about 86% of the maximum habitat index for steelhead in June.

**Measure WS-16:** Provide minimum bypass flows for adult migration in the anadromous reach in December through April of 0%-60% hydrologic conditions with a lower flow threshold of 9 cfs and an upper threshold of 16 cfs whenever flow would be at this level without City diversions.

**Measure WS-17:** Provide minimum bypass flows for spawning in the anadromous reach in December through May of 0%-60% hydrologic conditions of 12.1 cfs for 14 days following any adult migration period (provides estimated 80% of peak habitat index for steelhead spawning and 97% of the peak for coho).

**Measure WS-18:** Provide bypass flows for egg incubation in January through May of 0%-60% hydrologic conditions. The incubation flow in Majors Creek is 2.9 cfs. Incubation flows are provided for 60 days after the last spawning day or until May 30, whichever is earliest.

**Measure WS-19:** Provide bypass flows for smolt migration in the anadromous reach during January through May in 0-60% hydrologic conditions (hydrologic conditions 1-3), and for at least 3 consecutive days per week in March, April, and May in 60%-100% conditions (hydrologic conditions 4 and 5). The smolt migration minimum is 3.4 cfs.

**Table 4. Agreed Flows for Majors Creek Diversion, as Measured at the Majors Creek Anadromous Gage[1]**

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[4] (cfs) | Smolt Out-migration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 0.25 | 0.25 | 2.2 | 2.7 | 4.1 | 9.0/16.0 | 12.1 | 2.9 | 3.4 |
| Feb | 0.25 | 0.25 | 4.1 | 3.0 | 4.4 | 9.0/16.0 | 12.1 | 2.9 | 3.4 |
| Mar | 0.25 | 0.25 | 2.4 | 4.3 | 4.7 | 9.0/16.0 | 12.1 | 2.9 | 3.4[5] |
| Apr | 0.25 | 0.25 | 1.7 | 3.1 | 3.2 | 9.0/16.0 | 12.1 | 2.9 | 3.4[5] |
| May | 0.25 | 0.25 | 1.4 | 1.8 | 2.4 | — | 12.1 | 2.9 | 3.4[5] |
| Jun | 0.25 | 0.25 | 1.0 | 1.2 | 1.6 | — | — | — | — |
| Jul | 0.25 | 0.25 | 0.8 | 1.0 | 1.1 | — | — | — | — |
| Aug | 0.25 | 0.25 | 0.7 | 0.8 | 0.9 | — | — | — | — |
| Sep | 0.25 | 0.25 | 0.6 | 0.7 | 0.7 | — | — | — | — |
| Oct | 0.25 | 0.25 | 0.8 | 0.9 | 0.8 | — | — | — | — |
| Nov | 0.25 | 0.25 | 1.1 | 1.2 | 1.2 | — | — | — | — |
| Dec | 0.25 | 0.25 | 1.5 | 1.9 | 2.1 | 9.0/16.0 | 12.1 | — | — |

**Notes**: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 Provided in Hydrologic Conditions 1–3 only.

3 Provide for 14-day period after any potential migration event in Hydrologic Conditions 1–3.

4 Provided in Hydrologic Conditions 1–3 for 60-day period following occurrence of last spawning flow or May 31, whichever occurs first.

5 Provided in Hydrologic Conditions 1–3, and for 3 consecutive days per week in March, April, and May in Hydrologic Conditions 4–5.

## San Lorenzo River Diversion at Tait Diversion and Wells

The San Lorenzo River is a high priority for restoration. It is a large watershed with extensive anadromous habitat with approximately 26 miles of anadromous habitat in the mainstem and 57 miles in the tributaries (ENTRIX, Inc. 2004b). The San Lorenzo River supports steelhead and potentially supports coho and is a high priority for coho recovery efforts. Although the lagoon is highly altered from pre-development conditions and the habitat is significantly degraded, it is still important for rearing juvenile steelhead.

The strategy for streamflow restoration below Tait Diversion emphasized improving rearing conditions, particularly as inflow to the lagoon during the summer, and improved migration in dry and critically dry years. This entails preserving storage in Loch Lomond Reservoir to support reduced summer diversions, particularly in drier years. As a result, winter bypasses for adult migration were more limited, also in part since ample opportunities for migration could still be achieved. A schedule of instream flow targets to minimize effects of the Tait Street Diversion is presented in Table 5 and described as specific measures as follows.

The point of compliance for these flows is the City-maintained stream gage immediately downstream of the Tait Diversion. Tributaries contribute additional flow below the diversion though this contribution is limited, particularly in the dry season. These include Pogonip Creek, Branciforte Creek, Pasatiempo Creek, Arroyo de San Pedro Regaldo, and Ocean Villa Creek.

The applicable conservation measures from the ASHCP are below. Their numbers are not consecutive, and not all numbered ASHCP measures appear in this appendix, as not all measures are applicable to the Proposed Project and associated Agreed Flows.

**Measure WS-40:** Provide 8 cfs minimum bypass flow for rearing juvenile steelhead and lagoon inflows in the San Lorenzo River below the Tait Street diversion in dry and very dry hydrologic conditions. This is approximately 60% of the maximum habitat index for steelhead rearing in the reach.

**Measure WS-41:** Provide up to 18 cfs minimum bypass flow for rearing juvenile steelhead in the San Lorenzo River below the Tait Street diversion and for inflow to the lagoon in normal, wet, and very wet hydrologic conditions. This is approximately 80% of the maximum habitat index for steelhead rearing in the reach.

**Measure WS-42:** Provide minimum bypass flows for adult migration downstream of Tait Street with a lower flow threshold of 17 cfs and an upper threshold of 25.2 cfs in December through March of dry and very dry years. Adult migration bypass flows are to be provided whenever flow would be at this level without City diversions and when storage in Loch Lomond Reservoir is sufficient, otherwise provide bypass flow for 3 consecutive days per week or 5 consecutive days depending on Loch Lomond Reservoir storage levels.

**Measure WS-43:** Provide minimum bypass flows for adult migration downstream of Tait Street with a lower flow threshold of 17 cfs and an upper threshold is 25.2 cfs in December through April of normal, wet, and very wet years whenever flow would be at this level without City diversions.

**Measure WS-44:** Provide minimum smolt migration flows of 10 cfs during January through May in dry, normal, wet, and very wet hydrologic conditions, and for at least 3 consecutive days per week in very dry conditions during March through May. If the City determines that conditions will require diversion of stored water from Loch Lomond Reservoir that cannot be offset by diversions at Felton, or from Liddell and Majors Creeks, the City may further reduce smolt outmigration requirements at the Tait Street Diversion provided that: (a) drought has been officially declared by the City; and (b) this reduction in smolt outmigration opportunities will not reduce smolt migration more than one full day/week in the lower San Lorenzo River system or there is evidence from the San Lorenzo River or neighboring watersheds (i.e. Scott Creek) indicating that smolt migration is no longer occurring.

**Table 5. Agreed Flows for Tait Diversion on the San Lorenzo River, as Measured at the City Gage immediately downstream of Tait Diversion[1]**

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) | Egg Incubation[3] (cfs) | Smolt Out-migration (cfs) |
|---|---|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | | | |
| Jan | 8.0 | 8.0 | 15.8 | 16.4 | 17.5 | 17.0/25.2 | — | — | 10.0 |
| Feb | 8.0 | 8.0 | 15.9 | 16.7 | 18.0 | 17.0/25.2 | — | — | 10.0 |
| Mar | 80. | 8.0 | 16.3 | 17.3 | 18.2 | 17.0/25.2 | — | — | 10.0[4] |
| Apr | 8.0 | 8.0 | 17.2 | 17.9 | 18.4 | 17.0/25.2[5] | — | — | 10.0[4] |
| May | 8.0 | 8.0 | 17.7 | 18.2 | 18.5 | — | — | — | 10.0[4] |
| Jun | 8.0 | 8.0 | 16.6 | 18.1 | 18.5 | — | — | — | — |
| Jul | 8.0 | 8.0 | 12.4 | 15.8 | 18.2 | — | — | — | — |
| Aug | 8.0 | 8.0 | 9.8 | 11.9 | 16.4 | — | — | — | — |
| Sep | 8.0 | 8.0 | 9.0 | 11.1 | 13.3 | — | — | — | — |
| Oct | 8.0 | 8.0 | 9.8 | 11.4 | 13.3 | — | — | — | — |
| Nov | 8.0 | 8.0 | 12.5 | 14.1 | 16.4 | — | — | — | — |
| Dec | 8.0 | 8.0 | 15.1 | 16.2 | 17.6 | 17.0/25.2 | — | — | — |

## San Lorenzo River Diversion at Felton Diversion

Berry (2016) estimated that a flow of 40 cfs appears to be a reasonable adult migration flow estimate for the San Lorenzo River below Felton. This estimate was vetted with NMFS and CDFW in meetings of the technical working group and it was decided that bypass flows for Felton Diversions would be determined consistent with the other diversions. Specifically, 40 cfs would be used as the adult migration minimum and would be provided whenever it would occur in the absence of the diversion. Optimum spawning flows are typically slightly below migration flows and are provided for two weeks following the most recent occurrence of migration flows. Rearing flows are usually on the order of about half of migration flow levels (ASHCP).

The 40 cfs bypass flow for adult migration will be extended to provide for spawning for 14 days after potential passage events. The existing winter bypass flow of 20 cfs is half the recommended adult migration flow and is consistent with the proportional relationship between optimum rearing flow and adult migration flow derived through Physical Habitt Simulation (PHABSIM) model studies in other streams (HES 2014b). This bypass flow regime should also be protective of incubation and smolt migration based on these same results. A schedule of instream flow targets to minimize effects of the Felton Diversion is presented in Table 6 and described as specific measures as follows.

The applicable conservation measures from the ASHCP are below. Their numbers are not consecutive, and not all numbered ASHCP measures appear in this appendix, as not all measures are applicable to the Proposed Project and associated Agreed Flows.

**Measure WS-33:** Do not divert at the Felton Diversion during June through August.

**Measure WS-34:** Provide 20 cfs minimum bypass flow for rearing and smolt migration during November 1 through May 31 in all hydrologic categories.

**Measure WS-35:** Provide 10 cfs minimum bypass flow during September and 25 cfs minimum bypass in October in all hydrologic categories.

**Measure WS-36:** Provide 40 cfs minimum bypass flow for adult migration in December through April whenever natural flow would occur at this level in the absence of a diversion.

**Measure WS-37:** Provide 40 cfs minimum bypass flow for spawning in December through April for 14 days after potential passage events (i.e. 40 cfs flow and mouth of the river is open).

### Table 6. Agreed Flows for Felton Diversion on the San Lorenzo River, as Measured at the Big Trees Gage[1]

| Month | Rearing (Base Flow) (cfs) | | | | | Adult Migration[2] (cfs) | Spawning[3] (cfs) |
|---|---|---|---|---|---|---|---|
| | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* | | |
| Jan | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Feb | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Mar | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| Apr | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |
| May | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | — | 40.0 |
| Jun | No Diversion | | | | | | |
| Jul | | | | | | | |
| Aug | | | | | | | |
| Sep | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | — | — |
| Oct | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | — | — |
| Nov | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | — | — |
| Dec | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 |

**Notes**: cfs = cubic feet per second.
1 The required flow is determined by the life stage requiring the highest flow in any given month.
2 Provided when river mouth is open and natural flow would occur at this level without diversion.
3 Provided for 14 days following any potential migration event.

## Newell Creek Diversion

Standard facility operations for Newell Creek include a year-round minimum release requirement of 1 cfs below Newell Creek Dam. During the period from June through August, there is a requirement that the greater of 1 cfs or the natural flow of Newell Creek must be released.

Restoration of flow in Newell Creek was given lower priority than Laguna Creek and the San Lorenzo River. The anadromous reach length is relatively short and habitat conditions in the majority of the anadromous reach are degraded due to close proximity of residential development on both sides of the creek. Providing flow for migration and spawning would severely constrain storage in the reservoir and increase reliance on other diversions. Adult migration, spawning, incubation, and smolt migration bypass flows have not been specified for Newell Creek; however, flows sufficient for these uses occur during periods of reservoir spill. Existing agreements specify a minimum bypass flow of 1 cfs at all times.

Since the 1 cfs minimum release is above unimpaired levels at certain times and in order to preserve storage in Loch Lomond, an exception minimum of 0.25 cfs would be instituted when storage is low enough to result in supply shortages. PHABSIM model results indicate that the habitat suitability index for rearing steelhead at 0.25 cfs is 70% of the value at 1.0 cfs (HES 2014b). The City, in consultation with NMFS and CDFW, implemented a release of 0.2 cfs during recent drought conditions from February 2014 to February 2016 under a Temporary Urgency Change Petition approved by the State Water Resources Control Board. The 0.2 cfs flow level provided reasonable habitat conditions during that period based on observations made by the City Water Department and reviewed by NMFS and CDFW (Chris Berry, personal communication to Jeff Hagar, 2014). Provision of a slightly higher flow during exception years in the future should ensure that this continues to be the case. Exception minimum flows would be provided when Loch Lomond Reservoir storage falls below certain storage conditions shown in Table 7. A schedule of instream flow targets to minimize effects of the Newell Creek Diversion is also presented in Table 7 and described as specific measures as follows.

The applicable conservation measures from the ASHCP are below. Their numbers are not consecutive, and not all numbered ASHCP measures appear in this appendix, as not all measures are applicable to the Proposed Project and associated Agreed Flows.

**Measure WS-21:** Provide 0.25 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Newell Creek when Loch Lomond Reservoir storage is less than specified storage levels (Table 7).

**Measure WS-22:** Provide 1 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Newell Creek at all other times.

**Table 7. Agreed Flows for the Newell Creek Dam, as Measured at the City Gage immediately downstream of Newell Creek Dam**

| Month | Exception Minimum (cfs)[1] | Base Flow (cfs) | | | | |
|---|---|---|---|---|---|---|
| | | *Hydrologic Condition 5 (driest)* | *Hydrologic Condition 4 (dry)* | *Hydrologic Condition 3 (normal)* | *Hydrologic Condition 2 (wet)* | *Hydrologic Condition 1 (very wet)* |
| Jan | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Feb | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Mar | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Apr | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| May | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Jun | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Jul | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Aug | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Sep | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Oct | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Nov | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Dec | 0.25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |

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# 4 COMPARISON OF AGREED FLOWS AND INTERIM BYPASS FLOWS

With respect to changes in habitat for anadromous species, the major difference between the Proposed Project and Baseline is the addition of adult migration flows in April and spawning flows in December in the North Coast streams with the Proposed Project; addition of adult migration flows in April in the San Lorenzo River below the Tait Diversion with the Proposed Project; and implementation of bypass flows for adult migration and spawning in the San Lorenzo River downstream of the Felton Diversion with the Project (Table 8). These provisions, which are not included in the interim bypass flows reflected in the Baseline, result in increases in habitat values in months with hydrologic conditions in the 0%-60% exceedance range, which is generally in wetter year types (See Section 3.2 for explanation of hydrologic conditions).

Differences between the Interim Bypass Flows and Agreed Flows are reflected in Confluence model runs for the Baseline and Proposed Project with three exceptions. The Interim Bypass Flows have a provision for reduction of the bypass requirement at the Tait Diversion during exceptionally dry years known as exception year flows. Under this provision, the City could reduce the bypass flow to as low as 3 cfs from June through November and 2 cfs in December. This provision was not implemented in the Confluence model since the precise conditions under which it would be implemented were never defined. Nevertheless, the increase of the minimum bypass at the Tait Diversion to 8 cfs at all times under the Agreed Flows represents a substantial benefit of the Proposed Project to rearing juveniles downstream, particularly in the San Lorenzo River Lagoon.

There is another provision for unusually dry conditions, implemented under the Interim Bypass Flows, that allows for the City to reduce smolt bypass flows from Liddell and Majors Creeks and to negotiate further reductions to bypasses for smolt migration below the Tait Diversion. The precise language is as follows: "If the City determines that conditions will require diversion of stored water from Loch Lomond Reservoir that cannot be offset by diversions at Felton, additional water may be diverted from Liddell and Majors creeks by modifying smolt outmigration flow requirements to three days every two weeks. If additional water is determined to be required, the City may also request to further reduce smolt outmigration requirements at Tait Street as described under Critically Dry conditions." The Agreed Flows contains a similar provision for the Tait Diversion but does not reduce bypass flows for smolts in Liddell and Majors Creeks. Neither provision was modelled in Confluence due to a lack of definition about when it would be implemented (e.g. declaration of drought) and the uncertainty involved in determining when more water might be required. The Proposed Project would likely have somewhat reduced effects on smolt migration during drought conditions than the Baseline due to differences in these provisions.

The Interim Bypass Flows also contain a non-flow provision that specifies reservation of 650 gpm from the North Coast sources for local (North Coast) demand. Under conditions when bypass flow and North Coast demand requirements cannot be met, the City coordinates with North Coast customers to optimize predictability of use and potential for achieving goals, and consults with CDFW on reassessing conservation priorities in the context of water supply reliability. This provision is not included in the Agreed Flows and would not be part of the Proposed Project. This provision was also not included in the Confluence model for the same reason as given previously. The Proposed Project would therefore have somewhat improved habitat conditions in drier years compared to the Baseline.

**Table 8: Comparison of Interim Bypass Flows and Agreed Flows.**

| Location/Life Stage | Interim Bypass Flows (Baseline) | Agreed Flows (Proposed Project and Alternatives) |
|---|---|---|
| ***Laguna Creek*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% hydrologic exceedance conditions (HCs) |
| | No bypass for spawning in December | Bypass required for spawning in December |
| ***Liddell Creek*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% HCs |
| | No bypass for spawning in December | Bypass for spawning required in December in 0-60% HCs |
| ***Majors Creek*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% HCs |
| | No bypass for spawning in December | Bypass for spawning required in December in 0-60% HCs |
| ***San Lorenzo R @ Tait*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% HCs |
| | Reduced rearing bypass flows to 3 cfs minimum in exceptionally dry years | 8 cfs minimum bypass for rearing at all times |
| ***San Lorenzo R @ Felton*** | Minimum bypass 20 cfs Nov 1-May 31 | Minimum bypass 20 cfs Nov 1-May 31<br>Minimum bypass for adult migration and spawning 40 cfs Dec-Apr when flow without diversion would occur at this level<br>40 cfs bypass for spawning for 14 days following potential migration event |
| | 10 cfs September, 25 cfs October, No diversion July-Aug | 10 cfs September, 25 cfs October, No diversion July-Aug |
| ***Newell Creek*** | 1 cfs minimum bypass at all times | 1 cfs minimum bypass, 0.25 cfs during low Loch Lomond Reservoir storage |

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# Appendix D

## Hydrologic, Water Supply, and Fisheries Habitat Effects Modeling

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## 1.1 Overview

Appendix D, Hydrologic, Water Supply, and Fisheries Modeling provides information about the models and modeling results for the Santa Cruz Water Rights Project (Proposed Project or SCWRP).

Evaluation of long-term hydrologic variability in the City of Santa Cruz's (City) drinking water source watersheds, looking back as well as forward, is fundamental to understanding the City's effects on habitat of special-status aquatic species (specifically, Central California Coast coho salmon [coho] and Central California Coast steelhead [steelhead] which are anadromous salmonids) and options for their recovery as well as the long-term reliability of the City's water supply.[1] The City has long sponsored the United States Geological Survey (USGS) Big Trees and Santa Cruz gages on the San Lorenzo River and utilizes them to assist with seasonal supply planning and operation of the Felton Diversion, which has existing instream flow and other operational constraints dictated by the flow at the Big Trees gage. However, the City intensified its effort in 2003 during development of the Anadromous Salmonid Habitat Conservation Plan (ASHCP) with the installation of additional stream gages and initiation of related habitat evaluations. Concurrent with that, the City was also adopting the *Confluence*® water supply model to evaluate options for improving water supply reliability. Over time, the modeling of the effects of City water operations on habitat for coho and steelhead and on water supply reliability enabled the City, the California Department of Fish and Wildlife, and the National Marine Fisheries Service to develop a set of "Agreed Flows" for the ASHCP. The Agreed Flows strike a balance between water supply reliability and fisheries habitat. Consistent with the City's adopted Water Supply Augmentation Strategy, the City has evaluated its ability to meet supply reliability and fisheries conservation goals with modifications of its water rights. The modeling clearly demonstrated that the City cannot meet its water supply reliability goals without modification of its water rights and that these changes are necessary to enable long term provision of the Agreed Flows needed for the ASHCP. Therefore, the Agreed Flows and water rights modifications are included in the Proposed Project, which is described and evaluated in the Santa Cruz Water Rights Project Environmental Impact Report (EIR). The Agreed Flows are described in detail in Draft EIR Chapter 3 and Appendix C. This overview provides a summary of the three distinct models used to develop and evaluate the Proposed Project and a summary of the Baseline, Proposed Project, and alternatives for which modeling was conducted.

[1] The City owns and operates a water system that diverts and serves water both within the City limits and outside of those limits. References to the City's water system, rights and supplies therefore refer to areas both inside and outside of the City limits.

## 1.2 Summary of Models

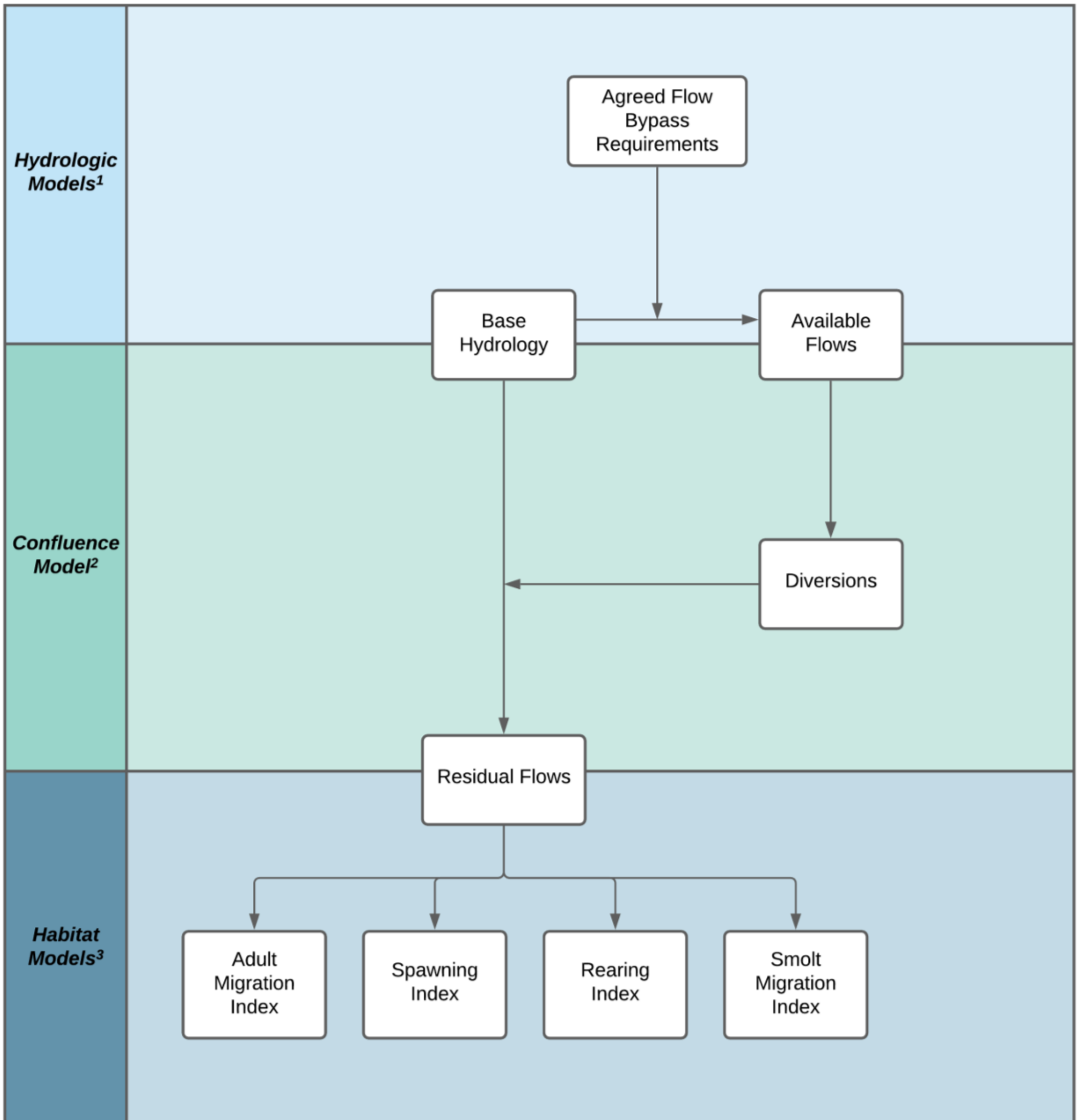
There are three distinct but interrelated models that the City has used in the effort to develop and evaluate the Proposed Project:

- **Hydrologic Model (Appendix D-1) -** A hydrologic model that develops the available daily flows in the North Coast streams (specifically Laguna, Liddell and Majors Creeks), the San Lorenzo River, and Newell Creek available for supply once the Agreed Flows are met.
- **Water Supply Model (Appendix D-2) -** The *Confluence*® water supply model, which utilizes available streamflows (generated by the Hydrologic Model) in a particular scenario (e.g., the Agreed Flows with the Proposed Project) and with many other system operating assumptions, to evaluate potential operations of the City's water system and the resulting water supply reliability and to calculate the resulting flow left instream for fish habitat.
- **Fisheries Habitat Effects Model (Appendix D-3) -** A fisheries habitat effects model that evaluates the fisheries habitat effects of the residual streamflows left instream after municipal supply demands are met in the Water Supply Model, consistent with the minimum streamflows required in a particular scenario, to develop flow-based metrics of habitat effects.

The following is a brief summary of each of these modeling components. Figure 1 provides a flow chart that illustrates how the models work together.

### Hydrologic Model

As discussed in Appendix D-1, this model was developed by Balance Hydrologics, Inc. in order to better understand the long term hydrologic variability in the City's drinking water source streams to provide the foundation for fisheries conservation and supply reliability planning. Developing a long term record suitable for supply reliability and biological effects evaluation was enabled by utilizing the long term record at the USGS Big Trees gage and other stream gages, but also required installation of 10 additional stream gages to better understand effects of City operations, hydrologic dynamics as they relate to availability of anadromous salmonid habitat under different City operations scenarios, and future water supply reliability predictions. Fundamental to this effort was an evaluation of locally downscaled climatic predictions and their effects on future, changed hydrologic dynamics, and subsequently, anadromous salmonid habitat viability and water supply reliability. This model developed daily flows available for diversion and/or storage over a multi-year historical period of record and for plausible climate change conditions.




Notes:

1. The Hydrologic Models apply the Agreed Flow bypass requirements to the Base Hydrology (using historical or climate change hydrology) to determine Available Flows for diversion at each of the City's diversion points.
2. The Available Flows are used in the Confluence Model to generate simulated Diversions. The Diversions are subtracted from the Base Flows to generate the Residual Flows remaining downstream of the diversion points.
3. The Habitat Models use the Residual Flows to develop the various fish habitat indices. Residual Flows represent the amount of streamflow left in the stream after Diversions, assuming diversion is possible after the Agreed Flow bypass requirements are met. Residual Flow may be different than the Agreed Flow bypass requirements if there is more flow in the stream than needed by the Diversions or if flow is less than the Agreed Flow bypass requirements with no diversion.

**Figure 1. Flow Chart of Hydrologic, Water Supply, and Fisheries Habitat Models**

## Water Supply Model

As discussed in Appendix D-2, this model was developed by Gary Fiske and Associates, Inc. *Confluence*® is a model designed to simulate the operation of water systems to assist water supply agencies to evaluate and compare supply and infrastructure alternatives. The model can accommodate a wide variety of water supplies, storage facilities, infrastructure and operating constraints including, but not limited to, raw water quality and instream flow needs. The model enables water suppliers to focus on the results that are most important to their decision-making or that are needed to fulfill legal or regulatory requirements, including different representations of:

- Water supply reliability
- Water demands including instream flow needs or other environmental demands
- Source-specific production
- Surface water and groundwater storage levels
- Treatment and transmission throughput

*Confluence*® used the available daily flows to assess the impacts on system operations and water supply reliability of different water rights and infrastructure alternatives, and produced residual streamflows after City diversions, which are input to the fisheries effects modeling.

## Fisheries Habitat Effects Model

As discussed in Appendix D-3, the fisheries habitat effects model was developed by Hagar Environmental Science to evaluate habitat conditions in City drinking water source streams under a variety of instream flow conditions. Effects analysis was based on determining flow/habitat relationships in streams from which the City diverts water using several standard methods. Flow/habitat relationships were used to evaluate potential habitat effects across a wide variety of hydrologic conditions to better understand the City's past, present, and future effects on coho and steelhead. The effects analysis was primarily focused on the influence of the City's water system operations on instream flows and the related habitat effects.

The following appendices describe each of these models and modeling results in detail. All three of the models are required to evaluate the Baseline, Proposed Project, and the alternatives discussed in the EIR, which are further described below.

## 1.3 Proposed Project and Alternatives Modeled

The scenarios evaluated in the EIR and modeled in this appendix include the following:

- **Baseline:** Conditions at the time the City issued the Notice of Preparation (NOP) for the EIR (2018).
- **Proposed Project:** All water rights modifications, including addition of Agreed Flows as the minimum bypass flows, and water supply augmentation components of the Proposed Project.
- **Alternative 1:** Agreed Flows only without other Proposed Project components.
- **Alternative 2:** Agreed Flows with all Proposed Project components except there is no place of use expansion, which means that there are no water transfers to neighboring agencies, and that aquifer storage and recovery (ASR) is possible only within the City's area of service.
- **Alternative 3:** Agreed Flows with all Proposed Project components except ASR.

Additionally, the standard operational and construction practices identified in Draft EIR Chapter 3 would apply to Alternatives 1 through 3, where relevant to each alternative. Additional description of the Baseline, Proposed Project, and alternatives is provided below. Detailed modeling assumptions for each scenario are included in Table 1 and described in more detail in Appendix D-2.

### Baseline

The Baseline represents City water rights, water supply operations, and bypass flows that were in place at the time the NOP was released (2018). The City's existing pre-1914 appropriative water rights authorize diversions from several North Coast streams and the City's post-1914 appropriative water rights allow diversions from Newell Creek and the San Lorenzo River under existing water rights licenses and permits (see EIR Chapter 3, Tables 3-1 and 3-2). Water supply operations under the Baseline consider existing infrastructure capacities, as shown in Table 1 and described in more detail in Appendix D-2. Bypass flows under the Baseline are defined by the interim bypass flow agreement between the City and the California Department of Fish and Wildlife (CDFW) which was included in the April 30, 2018 Tolling Agreement between CDFW and the City of Santa Cruz (see Appendix C for this agreement). All other conditions are based on those existing in 2018.

### Proposed Project

The Proposed Project is described in detail in EIR Chapter 3, Project Description. The Proposed Project includes proposed modifications to the City's existing water rights to improve flexibility in operation of the City's water system to better use limited water resources, while enhancing stream flows for local anadromous fisheries. The Proposed Project also includes water supply augmentation components and surface water diversion improvements that could result after the water rights modifications are approved. Specifically, the Proposed Project includes the following elements:

*Water Rights Modifications*

- Expanding the authorized place of use of the City's pre-1914 and post-1914 appropriative water rights to include the areas of service for the City, two local groundwater basins, and the service areas of neighboring water agencies, including Soquel Creek Water District, Scotts Valley Water District, San Lorenzo Valley Water District, and Central Water District.
- Explicitly authorizing direct diversion as a method of diversion under the City's Newell Creek License (License 9847) and its water-right permits for diversions at its Felton Diversion (Permits 16123 and 16601), which is not explicitly authorized under the current license and permits. This would complement the existing stated storage rights under that license and those permits and add a new maximum direct diversion rate of 31 cubic feet per second (cfs) to the Newell Creek license.
- Adding the City's existing Beltz system as points of rediversion into and out of groundwater storage through aquifer storage and recovery (ASR) wells to the City's Tait Licenses (Licenses 1553 and 7200) and Felton Permits, and adding the Tait Diversion as a new point of diversion on the Felton Permits, which would provide the ability to divert water under the Felton Permits with or without activation of the Felton Diversion inflatable dam. This would help the City to fully utilize the 3,000 acre-foot per year (afy) appropriation authorized by the Felton permits.
- Adding an underground storage supplement to the City's Tait Licenses and Felton Permits to allow for the City's Beltz system ASR component. An underground storage supplement is required to be filed with the SWRCB for post-1914 water right permits and licenses seeking to divert surface water to groundwater aquifers to artificially recharge these aquifers for further beneficial use. The City also is similarly adding potential groundwater storage through ASR operations in the Beltz system to its pre-1914 appropriative water rights.
- Granting an extension of time of 25 years to maximize beneficial use of water under the Felton Permits.
- Modifying City water rights to include the Agreed Flows as minimum bypass flows as negotiated with state and federal resource agencies to protect fisheries.

*Water Supply Augmentation Components*

- Santa Cruz ASR - ASR in the Santa Cruz Mid-County Groundwater Basin inside the areas served by the City and/or in the Santa Margarita Groundwater Basin outside the areas served by the City
- Beltz System ASR - ASR within the City's existing Beltz well system
- Water transfers and exchanges and intertie improvements

*Surface Water Diversion Improvements*

- Felton Diversion fish passage improvements
- Tait Diversion and Coast Pump Station improvements

The modeling of the Proposed Project accounts for the proposed water rights modifications, proposed water supply augmentation and surface water diversion improvements, as applicable, as well as infrastructure improvements that have independent utility and would be implemented in the future regardless of the Proposed Project, as identified in Table 1 and described in more detail in Appendix D-2.

### Alternative 1: Agreed Flows Only Without Other Proposed Project Components

Alternative 1 consists of the Agreed Flows, consistent with the Proposed Project. None of the other components of the Proposed Project, as summarized above and described in more detail in EIR Chapter 3, would be implemented under Alternative 1. All other conditions are generally based on those existing in 2018 and include existing water rights and existing infrastructure capacities, with the exception that all infrastructure improvements that have independent utility and would be implemented in the future regardless of the Proposed Project are also included in the modeling. These include improvements related to the Newell Creek Pipeline and the Graham Hill Water Treatment Plant. See Table 1 and Appendix D-2 for additional information about the modeling conditions for Alternative 1.

### Alternative 2: All Proposed Project Components except Place of Use Expansion

Alternative 2 includes most components of the Proposed Project, as summarized above and described in more detail in EIR Chapter 3, except there would be no place of use expansion focused on ensuring regional water supply reliability in neighboring districts and groundwater basins. That said, the place of use for City water rights may still be refined to provide alignment amongst the City's water rights – which are currently inconsistent in their respective places of use. Alternative 2 would not include water transfers to neighboring water agencies and ASR would be possible only within the City's water system's service area. Therefore, Alternative 2 would include Beltz ASR and potentially other ASR facilities within the areas served by the City's water system. Given the limited area to implement ASR, the modeling considers a reduced injection and extraction capacity, as shown in Table 1 and described in more detail in Appendix D-2. All other modeling conditions for Alternative 2 are consistent with the Proposed Project.

### Alternative 3: All Proposed Project Components except Aquifer Storage and Recovery

Alternative 3 includes most components of the Proposed Project, as summarized above and described in more detail in EIR Chapter 3, except there would be no ASR. Therefore, Alternative 3 would not include Beltz ASR or other ASR facilities within or beyond the areas served by the City. All other modeling conditions for Alternative 3 are consistent with the Proposed Project.

**TABLE 1: MODELING ASSUMPTIONS FOR BASELINE, PROPOSED PROJECT AND ALTERNATIVES**

| MODELING COMPONENT | MODELING ASSUMPTIONS | | | | |
|---|---|---|---|---|---|
| | **Baseline** | **Proposed Project** | **Alt 1** | **Alt 2** | **Alt 3** |
| **DEMANDS** | | | | | |
| City Service Area | 3,200 mgy | 3,200 mgy | 3,200 mgy | 3,200 mgy | 3,200 mgy |
| North Coast Agriculture | 40 mgy | 40 mgy | 40 mgy | 40 mgy | 40 mgy |
| **HYDROLOGY** | | | | | |
| Historical Hydrologic Record | 1937-2015 | 1937-2015 | 1937-2015 | 1937-2015 | 1937-2015 |
| Climate Change Hydrologic Record | 2020-2070 | 2020-2070 | NA | NA | NA |
| Climate Model | CMIP-5 MOD | CMIP-5 MOD | NA | NA | NA |
| Flow Rules | 2018 Interim Bypass Flows | Agreed Flows | Agreed Flows | Agreed Flows | Agreed Flows |
| **DISPATCH OF SUPPLIES IN MODELING** | | | | | |
| Source Dispatch Order to Meet City Demand | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Beltz Wells<br>5. Surface water storage | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Felton<br>5. Beltz Wells<br>6. Surface water and groundwater storage operated in parallel | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Beltz Wells<br>5. Surface water storage | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Felton<br>5. Beltz Wells<br>6. Surface water and groundwater storage operated in parallel | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Felton<br>5. Beltz Wells<br>6. Surface water |
| North Coast Potential End Uses | 1. Agricultural Demands<br>2. City Demands | 1. Agricultural Demands<br>2. City Demands<br>3. GW Storage<br>4. Transfers | 1. Agricultural Demands<br>2. City Demands | 1. Agricultural Demands<br>2. City Demands<br>3. GW Storage | 1. Agricultural Demands<br>2. City Demands<br>3. Transfers |
| Tait Potential End Uses | City Demands | 1. City Demands<br>2. GW Storage<br>3. Transfers | City Demand | 1. City Demands<br>2. GW Storage | 1. City Demands<br>2. Transfers |

**TABLE 1: MODELING ASSUMPTIONS FOR BASELINE, PROPOSED PROJECT AND ALTERNATIVES**

| MODELING COMPONENT | MODELING ASSUMPTIONS | | | | |
|---|---|---|---|---|---|
| | **Baseline** | **Proposed Project** | **Alt 1** | **Alt 2** | **Alt 3** |
| Felton Potential End Uses | Surface storage | 1. City Demands<br>2. Surface storage<br>3. GW Storage<br>4. Transfers | Surface storage | 1. City Demands<br>2. Surface storage<br>3. GW Storage | 1. City Demands<br>2. Surface storage<br>3. Transfers |
| Beltz Wells Potential End Uses | City Demands | City Demands | City Demands | City Demands | City Demands |
| Loch Lomond Potential End Uses (and ASR Potential End Uses for Proposed Project and Alt 2) | City Demands | City Demands | City Demands | City Demands | City Demands |
| **DIVERSION CAPACITIES** | | | | | |
| Liddell | 2.47 cfs | 2.47 cfs | 2.47 cfs | 2.47 cfs | 2.47 cfs |
| Laguna | 6.27 cfs | 6.27 cfs | 6.27 cfs | 6.27 cfs | 6.27 cfs |
| Majors | 2.09 cfs | 2.09 cfs | 2.09 cfs | 2.09 cfs | 2.09 cfs |
| Tait | 11.52 cfs | 27.85 cfs | 11.52 cfs | 27.85 cfs | 27.85 cfs |
| Felton | 12.40 cfs | 13.70 cfs | 13.70 cfs | 13.70 cfs | 13.70 cfs |

**TABLE 1: MODELING ASSUMPTIONS FOR BASELINE, PROPOSED PROJECT AND ALTERNATIVES**

| MODELING COMPONENT | MODELING ASSUMPTIONS | | | | |
|---|---|---|---|---|---|
| | **Baseline** | **Proposed Project** | **Alt 1** | **Alt 2** | **Alt 3** |
| **WATER RIGHTS (maximum diversion rate)** | | | | | |
| North Coast | No limit | No limit | No limit | No limit | No limit |
| Felton | Jan-May; Oct-Dec 20.0 cfs<br>Jun-Aug 0<br>Sep 7.8 cfs | Shared water right:<br>Jan-May; Oct-Dec 32.2 cfs<br>Jun-Aug 12.2 cfs<br>Sep 20.0 cfs[2] | Jan-May; Oct-Dec 20.0 cfs<br>Jun-Aug 0<br>Sep 7.8 cfs | Shared water right:<br>Jan-May; Oct-Dec 32.2 cfs<br>Jun-Aug 12.2 cfs<br>Sep 20.0 cfs | Shared water right:<br>Jan-May; Oct-Dec 32.2 cfs<br>Jun-Aug 12.2 cfs<br>Sep 20.0 cfs |
| Tait | 12.2 cfs in all months | | 12.2 cfs in all months | | |
| **WATER TREATMENT PLANT CAPACITY (mgd)** | | | | | |
| Graham Hill WTP | 16.5 mgd | 18.0 mgd | 18.0 mgd | 18.0 mgd | 18.0 mgd |
| **OTHER KEY OPERATING CONSTRAINTS** | | | | | |
| North Coast | Turbidity | Turbidity | Turbidity | Turbidity | Turbidity |
| Felton | Turbidity, First Flush, Pump limitations, Reservoir elevations | Turbidity, First Flush | Turbidity, First Flush | Turbidity, First Flush | Turbidity, First Flush |
| Tait | Turbidity | Turbidity | Turbidity | Turbidity | Turbidity |

[2] This manner of modeling the way that diversions at Tait and Felton would interact in the Proposed Project and Alternatives 2 and 3 reasonably replicates how the two facilities would operate with proposed changes to the City's current water rights for those facilities. The City's proposed changes to those rights, however, would not involve adding Felton as a point of diversion on the City's licenses for the Tait Diversion. The City therefore would not divert water at Felton during the period of each year when the Felton Permits do not authorize diversions. Permit 16123 only authorizes diversions at Felton from September 1 through June 1. Permit 16601 only authorizes diversions there from October 1 to June 1.

**TABLE 1: MODELING ASSUMPTIONS FOR BASELINE, PROPOSED PROJECT AND ALTERNATIVES**

| MODELING COMPONENT | MODELING ASSUMPTIONS | | | | |
|---|---|---|---|---|---|
| | **Baseline** | **Proposed Project** | **Alt 1** | **Alt 2** | **Alt 3** |
| **WELL EXTRACTION CAPACITIES (NATIVE GROUNDWATER)** | | | | | |
| Beltz | 0.8 mgd Apr - Nov in all water years | 0.8 mgd Apr - Nov in all water years | 0.8 mgd Apr - Nov in all water years | 0.8 mgd Apr - Nov in all water years | 0.8 mgd Apr - Nov in all water years |
| Beltz 12 | 0.3 mgd May - Aug in critically dry years | 0.3 mgd May - Aug in critically dry years | 0.3 mgd May - Aug in critically dry years | 0.3 mgd May - Aug in critically dry years | 0.3 mgd May - Aug in critically dry years |
| Tait Wells | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr |
| **LOCH LOMOND RESERVOIR** | | | | | |
| Max/usable capacity | 2,810 mg/1,740 mg | 2,810 mg/1,740 mg | 2,810 mg/1,740 mg | 2,810 mg/1,740 mg | 2,810 mg/1,740 mg |
| Allowable diversion months | Sept-Jun | Sept-Jun | Sept-Jun | Sept-Jun | Sept-Jun |
| Daily Instream Release | 1.00 cfs | 1.00 cfs | 1.00 cfs | 1.00 cfs | 1.00 cfs |
| Annual San Lorenzo Valley Entitlement | 102.1 mg | 102.1 mg | 102.1 mg | 102.1 mg | 102.1 mg |
| **AQUIFER STORAGE & RECOVERY** | | | | | |
| Storage Capacity | N/A | 3,000 mg | N/A | 2,100 mg | N/A |
| Aquifer Losses | N/A | 20% | N/A | 20% | N/A |
| Injection Capacity | N/A | Historic 4.5 mgd; Climate Change 5.5 mgd | N/A | 2.10 mgd | N/A |
| Extraction Capacity | N/A | Historic 8.0 mgd; Climate Change 7.0 mgd | N/A | 2.17 mgd | N/A |
| Injection Season | N/A | Nov-Apr | N/A | Nov-Apr | N/A |
| Extraction Season | N/A | May-Oct | N/A | May-Oct | N/A |
| Hydrologic condition restriction | N/A | No injection in Hydrologic Condition-5 months | N/A | No injection in Hydrologic Condition-5 months | N/A |

**TABLE 1: MODELING ASSUMPTIONS FOR BASELINE, PROPOSED PROJECT AND ALTERNATIVES**

| MODELING COMPONENT | MODELING ASSUMPTIONS | | | | |
|---|---|---|---|---|---|
| | **Baseline** | **Proposed Project** | **Alt 1** | **Alt 2** | **Alt 3** |
| **WATER TRANSFERS** | | | | | |
| Maximum monthly transfer | N/A | Neighbor agency groundwater demands | N/A | N/A | Neighbor agency groundwater demands |
| Hydrologic condition restriction | N/A | No transfer in Hydrologic Condition-4 & Hydrologic Condition-5 months | N/A | N/A | No transfer in Hydrologic Condition-4 & Hydrologic Condition-5 months |

# 1. Introduction and Background

This document provides a general overview of the hydrologic model used to complete historical and climate change (CC) analysis in support of the City of Santa Cruz Water Supply Planning (WSP) efforts, as well as evaluation of the Proposed Santa Cruz Water Rights Project–Proposed Project (see Chapter 3 of the Draft Environmental Impact Report for a full description of the Proposed Project). Modeling work for the WSP occurred during the time period 2008–2018, referred to as the WSP analysis period, and modeling completed in support of the Draft Environmental Impact Report occurred from 2014–2020. During the WSP analysis period, the hydrologic modeling tools and approaches evolved and were updated numerous times due to active discussions with the regulatory agencies involved in the WSP negotiations, and in order to incorporate more hydrologic observations into the model framework. We refer to the model framework as the Base Hydrology Model.

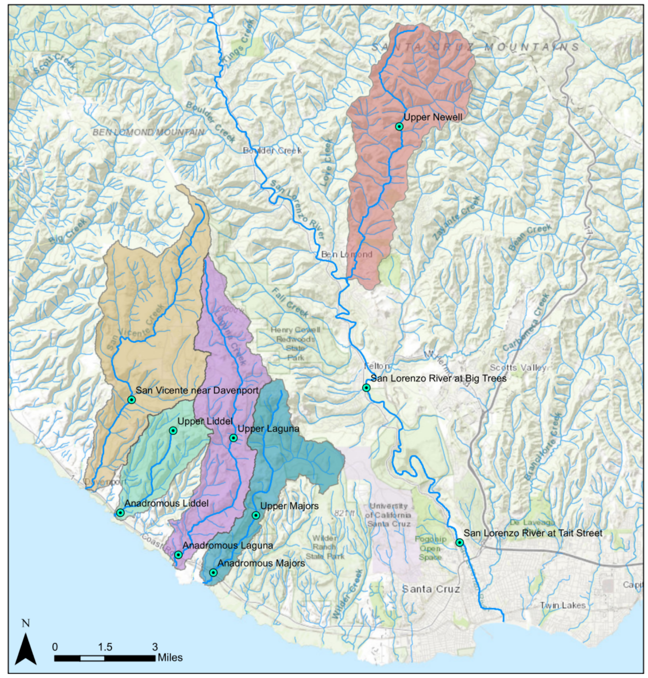



Figure 1: Source Streams and Gaging Station Locations

The Base Hydrology Model uses a combination of measured and modelled daily streamflows to represent the historical hydrology of the region. Rivers and streams represented in the model are a part of the City of Santa Cruz (City) water supply system, and provide habitat for coho salmon and steelhead trout. We refer to these streams as Source Streams (Figure 1):

a. San Lorenzo River at Big Trees Station and Tait Street Station;

b. Liddell Creek–Upper Station and Anadromous Station;

c. Majors Creek–Upper Station and Anadromous Station;

d. Laguna Creek–Upper Station and Anadromous Station; and

e. Newell Creek–Upper Station and Anadromous Station.

In the case of Laguna, Majors and Newell Creeks, the “Upper" Stations are located upstream of points of water supply diversions owned and maintained by the City. The Upper Liddell Creek station occurs downstream of the City’s diversion at Liddell Spring. In contrast, all “Anadromous" Stations are downstream of diversion points within the reaches of anadromy of coho salmon and steelhead trout (Figure 1). More specifically, Anadromous stations correspond to locations on Laguna, Majors, Liddell and Newell Creeks where upstream migration of anadromous fish is limited due to migrational barriers, or other limiting factors (Appendix D-3).

## 2. Overview of the Base Hydrology Model

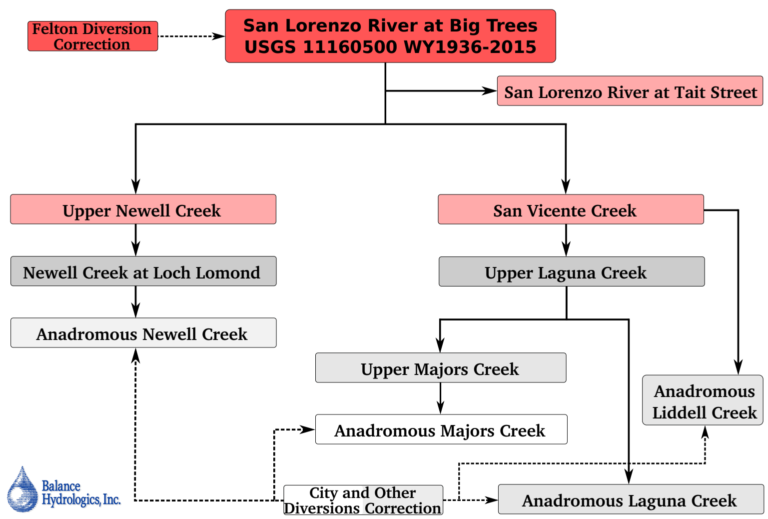



Figure 2: Work flow of the Base Hydrology Model. The diagram illustrates how the regression relationships provided within Appendix A are applied within the model. Lines between boxes indicate application of the specified set of regression relationships between the two indicated stations. All daily streamflows for the historical analysis period WY1936-2015 are derived from the USGS Big Trees published records. Dashed lines indicate that the flow corrections are estimates.

The basic purpose of the Base Hydrology Model is to partition modelled daily flow at points of diversion between water supply (Appendix D-2) and target instream flows for the various life stages of coho salmon and steelhead trout (see Appendix D-3 for a description of instream flow rule requirements, specifically referred to as the *Agreed Flows*). In general, the *Agreed Flows* vary by source stream, and according to five hydrologic categories calculated for the San Lorenzo River at Big Trees gage (Big Trees) (Table 1): critically dry, dry, average, wet and very wet (Figure 3). The five hydrologic categories are partitioned between the quintile statistics (i.e. 20%, 40%, 60% and 80%) for annual flows at Big Trees. For example, critically dry conditions correspond to total annual flows that are less than the $20^{th}$–percentile flow condition for the Big Trees period of record (Figure 3). See Appendix D-3 for more information on the statistical hydrologic categories, and how they are applied within the Proposed Project instream flow rules.

Streamflow is modelled at the daily time step for multiple reasons. First, daily streamflow provides a reasonable measure of basic habitat conditions for coho salmon and steelhead trout because daily streamflow can be directly linked with field measurements of habitat suitability (Appendix D-3). Second, the water supply system model used to evaluate water supply reliability for the City of Santa Cruz operates at the daily time step since water use generally fluctuates daily (Appendix D-2). Last, we cannot reliably model streamflow at time scales smaller than daily, and the monthly time step is too coarse for analysis purposes. Next we describe the model in more detail.

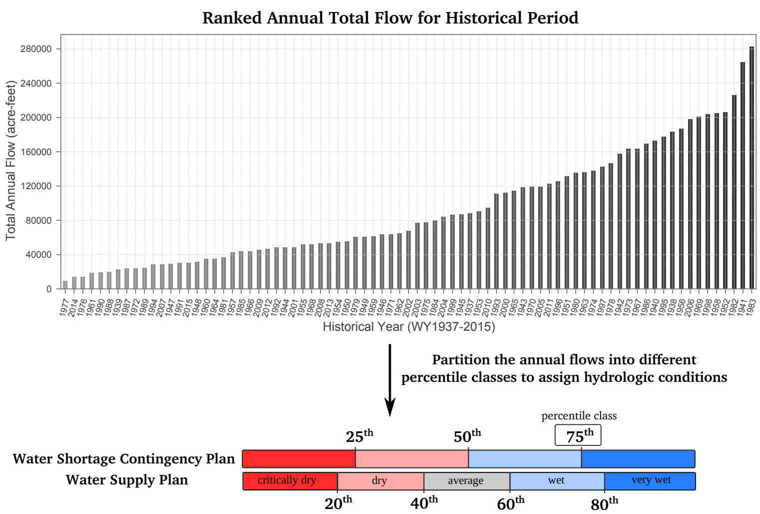



Figure 3: Graphic describing the five hydrologic categories used for the Water Supply Plan, and to evaluate the Proposed Project. The ranked annual total flow is for the Big Trees gage. The Water Shortage Contingency Plan categories were used for previous water supply planning undertaken by the City of Santa Cruz (City of Santa Cruz Water Department, 2009), and are shown for reference purposes only.

The San Lorenzo River at Big Trees (Big Trees) hydrologic record serves as the control point of the Base Hydrology Model. We selected the Big Trees record as the model control point for a few reasons. First, it is the longest running regional stream gaging station, operated by the United States Geological Survey since October 1936 and continuing to the present day. Second, the San Lorenzo River is a primary water supply source for the City of Santa Cruz. For the purposes of the WSP, the Base Hydrology Model simulates daily historical flow conditions in each source stream for the historical period October 1936–September 2015 (historical analysis period). Following standard convention, we refer to the historical analysis period as Water Years 1936-2015 (WY1936-2015). A water year runs from October 1 of one calendar year, to September 30 of the following year. For example, WY1950 begins on October 1, 1949 and ends September 30, 1950. The historical analysis period ends in September 2015 because it was necessary to stop adding data at some point in order to reach consensus on an overall conservation strategy. September 2015 was also a reasonable stopping point in the analysis data set because it followed three years of severe drought, and WY2015 is one of the driest years of local records.

Streamflow modeling occurs with regression models constructed from available gaged daily flow records. In general, daily streamflows for non-measurement periods are estimated at all source stream stations based on the Big Trees daily flow record. The specific gaging records and associated measurement periods used to develop the Base Hydrology Model and the regression relationships are provided in Table 1.

Table 1: List of Gaging Records used in the Base Hydrology Model

1. San Lorenzo River at Big Trees (USGS Gage 11160500): October 1936–September 2015;
2. San Lorenzo River at Tait Street (USGS Gage 11161000): October 1987–September 2015;
3. Laguna Creek near Davenport (USGS Gage 11161590): October 1969–September 1976;

4. Laguna Creek upstream of Laguna Dam (City and Balance Hydrologics): October 2003–present;
5. Laguna Creek at Highway 1 (City and Balance Hydrologics): October 2003–present;
6. Majors Creek near Davenport (USGS Gage 11161570): October 1969–September 1976;
7. Majors Creek upstream of Majors Dam (City and Balance Hydrologics): October 2004–present;
8. Majors Creek at Highway 1 (City and Balance Hydrologics): October 2004–present;
9. Liddell Creek near Bonny Doon (City and Balance Hydrologics): October 2003–present;
10. Liddell Creek at Highway 1 (City and Balance Hydrologics): October 2004–present;
11. San Vicente Creek near Davenport (USGS Gage 11161800): October 1969–September 1985.
12. Newell Creek upstream of Loch Lomond Dam (City and Balance Hydrologics): October 2003–present;
13. Anadromous Newell Creek (City and Balance Hydrologics): October 2003–present;

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Each station in Table 1 is a modeling node in the Base Hydrology Model. We use the former USGS San Vicente Creek station daily records within the model because it provides the best basis of correlation for Laguna Creek (Figure 1). Streamflows between San Vicente and Laguna Creeks correlate because the upper watershed drainage basins include significant areas of Karst. Karst landscapes include underground drainage systems due to the dissolution of bedrock such as limestone or marble. Marble bedrock occurs in both the San Vicente and Laguna Creek basins. Note though that San Vicente Creek is not a water supply source for the City of Santa Cruz.

The regression relationships used to estimate daily flows during non-measurement periods within the Base Hydrology Model are provided in Tables A1 and A2 (Appendix A). The regression relationships were first developed in 2010, and were re-examined and revised in 2015 following three years of drought. A re-examination of the regression models resulted in changes to models for Tait Street, Liddell, Laguna and Majors Creeks (Table 1). In all cases, changes made to the regression models reflect the need to better simulate daily flows during low flow months and periods of drought. Water supply and instream habitat conditions for coho salmon and steelhead trout are most challenged during these times. The regression relationships are executed within a MathWorks MATLAB script, developed specifically for the WSP.

## 2.1. Calculation of Daily Flows

The Big Trees record of daily flow for the historical analysis period is read into the Base Hydrology Model. The script then computes daily flows at all other stations according to the work flow shown in Figure 2, and for the historical analysis period WY1936-2015. Color changes to the station names in Figure 2 indicate that the basis of mean flow calculation changes (Tables A1 and A2). For example, Big Trees is used to calculate the daily flow record at San Vicente Creek for the historical analysis period. Then in turn, the daily flow record for San Vicente Creek is used to calculate flows at Upper Laguna Creek over the same period (Figure 2). Although our modeling strategy may propagate errors, the results are satisfactory because the Base Hydrology Model is able to reproduce the observed hydrologic trends over the historical analysis period (discussed in more detail in the paragraphs that follow).

Table 2: Summary Information for Inter-basin Model Calibration.

| | Mean daily flow for calibration period | | |
|---|---|---|---|
| Stream | Obs (cfs-days) | Sim. (cfs-days) | Rel. error (%) |
| Laguna (11161590) | 4.82 | 5.02 | 4.3 |
| Majors (11161570) | 4.24 | 4.30 | 1.5 |
| Liddell (Upper) | 4.28 | 4.24 | 1.7 |
| Tait (11161000) | 144.3 | 140.4 | 2.7 |

1. Calibration period varies. See Figure 4.
1. Relative error = $(Sim. - Obs.)/Obs.$

In the course of computing the daily flow records according to Figure 2, flow corrections are made to Big Trees and all anadromous stations in order to account for upstream flow diversions:

- **San Lorenzo River at Big Trees**: Record of diversion at Felton;
- **San Lorenzo River at Tait**: Record of diversion at Tait and Felton;
- **Anadromous Laguna Creek**: Record of North Coast production + 0.25 cubic feet per second ;
- **Anadromous Majors Creek**: Record of North Coast production + 0.194 cubic feet per second;
- **Anadromous Liddell Creek**: Record of diversion at Liddell Spring.

The application of flow corrections to affected gages for times when data is available means that daily flow records used in the Base Hydrology Model are assumed to represent quasi-unimpaired flow conditions. Despite the application of flow corrections, daily flows used in the model may not fully account for all upstream water extractions from source streams, tributaries and shallow ground water which directly influence instream flows. We also do not consider other watershed conditions that could influence instream flows that

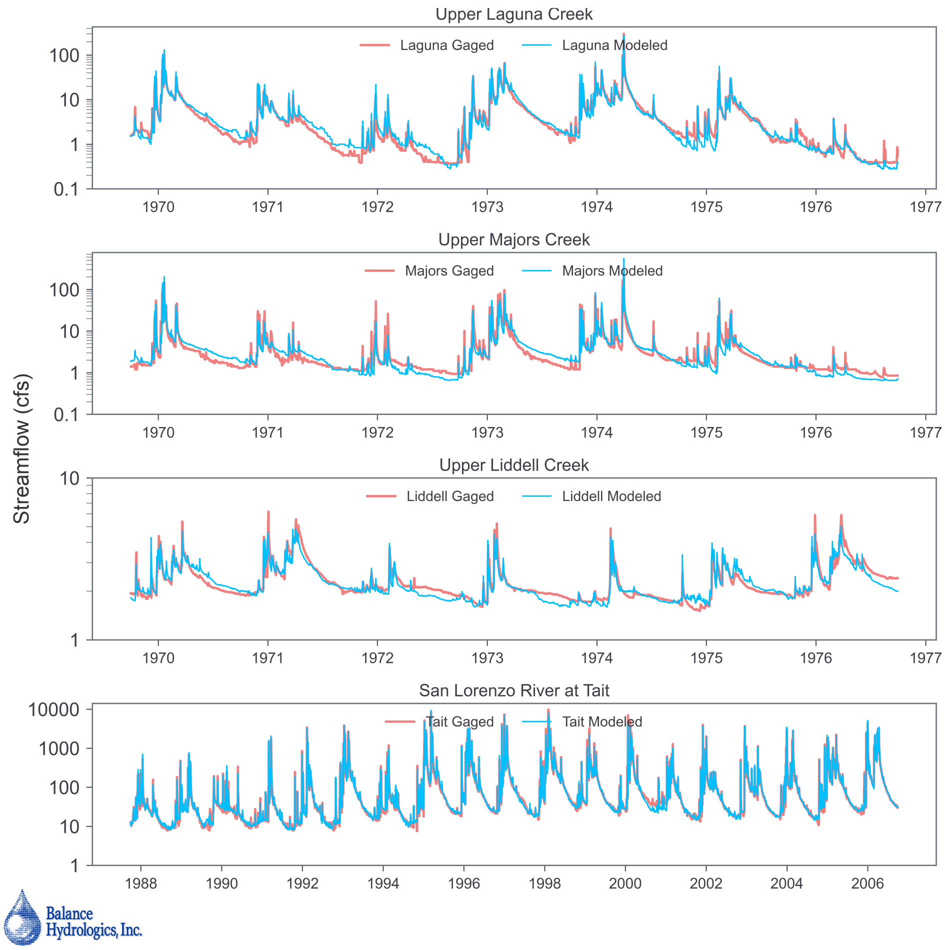


Figure 4: Comparisons between gaged and modelled daily streamflows. Modelled streamflows were calculated according to the regression relationships provided in Appendix A.

we could not possibly detect through gaging record analysis. City records of water supply production, flow release tests and gaging station records for stations located immediately downstream of City diversions on Laguna, Majors and Liddell Creeks are the basis for the corrections applied in the model. A comparison between gaged and modelled streamflows for Laguna, Majors and Liddell Creeks, as well as the San Lorenzo River at Tait Street is shown in Figure 4. The calibration period differs across the stations, and is shown as the x-axes of Figure 4.

The overall reliability of the Base Hydrology Model is reasonable for Upper Laguna, Upper Majors, Upper Liddell and Tait Street (Figure 4). Relative errors of the model for each of these four stations is < 5% when comparing mean daily streamflows over the respective calibration periods (Table 2). A suitably calibrated model is expected to have a relative error < 10% (Elsner and others, 2010).

### 2.2. Why a Regression Basis for the Base Hydrology Model?

The City of Santa Cruz has previously used a physically-based watershed scale hydrologic model for its Integrated Water Management Planning (IWMP) projects (City of Santa Cruz Water Department, 2009). In 2006 we evaluated output from the IWMP against gaging records for Laguna, Majors and Liddell Creeks. The comparison revealed that the IWMP-derived flows generally have a wet bias [i.e more streamflow] relative to measurements made during summertime low flow periods, periods of drought, intra-storm periods and recessional flow periods (Figure 5). A wet bias during these conditions was difficult to accept because of the challenges faced by instream habitat conditions as well as water supply availability during low flow periods. This circumstance, coupled with the City's desire to examine numerous instream flow and water supply scenarios, prompted the project team to adapt and build a hydrology model for the source streams using available gaging records as the model basis.

The simplicity of the Base Hydrology Model provides two advantages. First, we can efficiently evaluate different instream flow rules or water supply scenarios (it takes less than 1 minute to run a simulation once the input files are built), and second, the model is built using observations of streamflow (corrected with available data) within all source streams. In support of the WSP and the Draft Environmental Impact Report, the Base Hydrology Model has been used to evaluate more than 50 different scenarios.

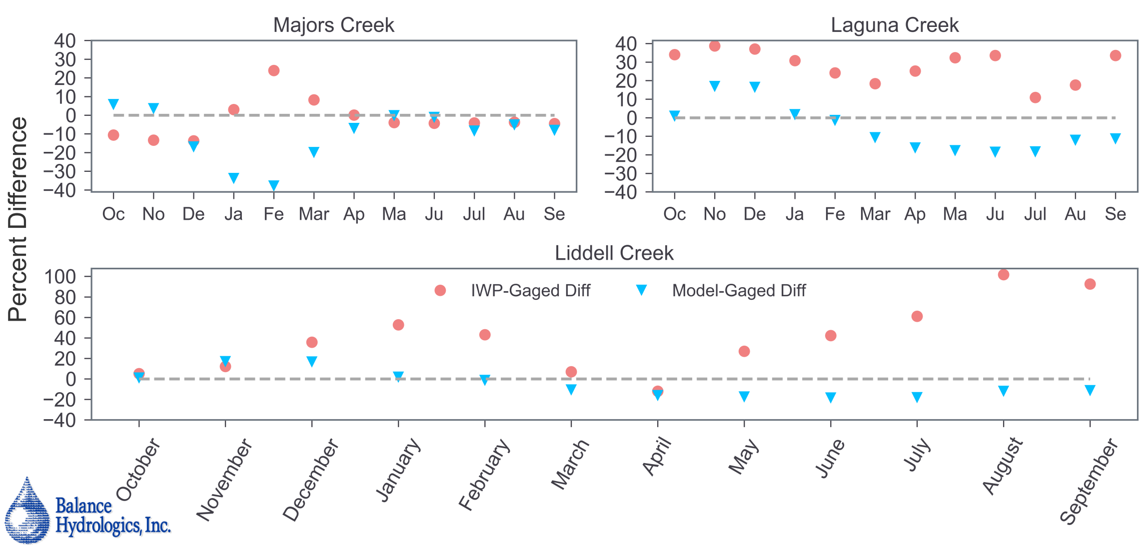


Figure 5: Percent difference between IWMP modelled flows and associated gaged flows (IWP-Gaged Diff), and regression modelled flows and associated gaged (Model-Gaged Diff) flows. Values represent monthly averages calculated over the gaging period of records (Table 1).

## 2.3. Limitations and Assumptions for Base Model

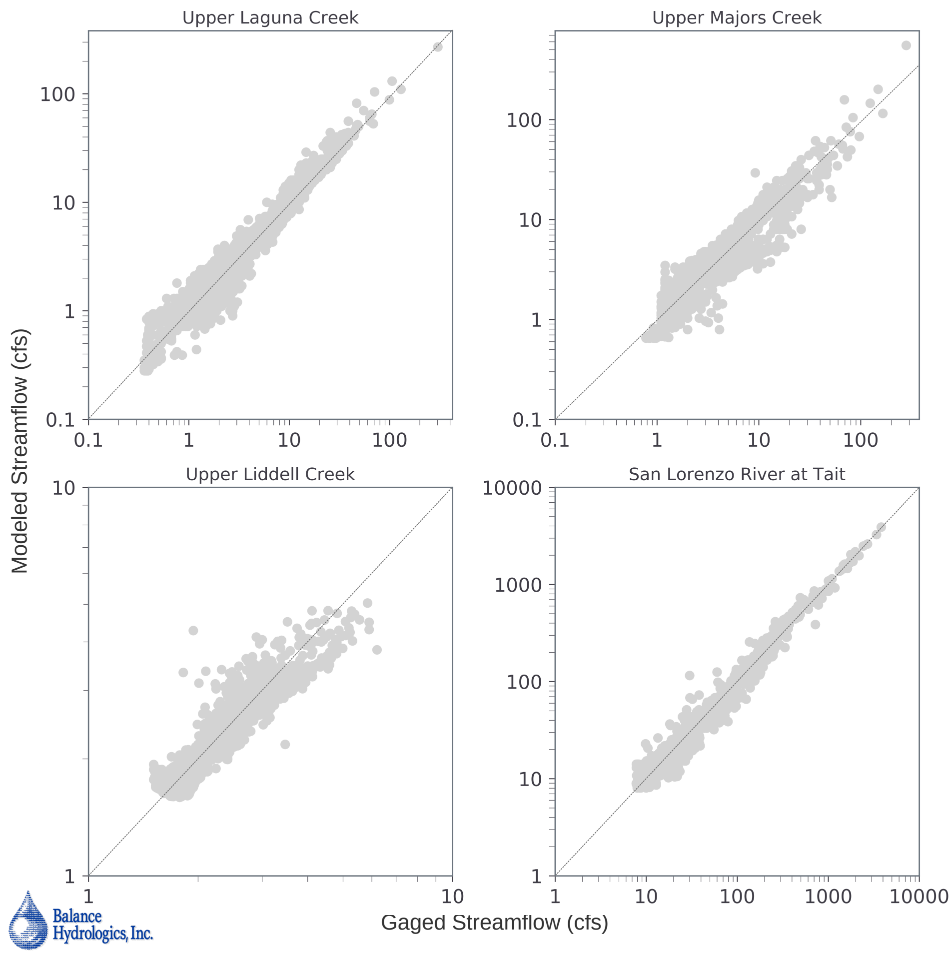


Figure 6: Comparison between gaged and modelled streamflows for Upper Laguna, Upper Majors, Upper Liddell and the San Lorenzo River at Tait Street. The data for Laguna and Majors Creek spans WY1970-76; the data for Liddell Creek spans WY2003-09, and the data for Tait spans WY1987-06. Similar results occur for Laguna and Majors Creek for the more recent period for which gaging records exist (Table 1). 1:1 lines shown for reference.

The Base Hydrology Model is constructed with regression relationships that have been identified in order to model low flow periods to a level acceptable to the City and regulatory agencies. The regression relationships can, for example, track changes in flow reported within applicable gaging records (Figure 4), and in general provide an improvement over flow records developed as a part of the IWMP (Figure 5). However, in some cases the regression relationships do not reproduce summertime flows reported, for example, at the USGS Laguna Creek near Davenport station during WY1972 (Figure 4). Model departures from summertime gaged flows in WY1972 exist because the regression relationships do not capture all of the variance present in the historical data. This is expected given our approach. Nonetheless, the model does capture the magnitude of the drought summertime flows during WY1976. This outcome reflects our general goal since we understand WY1976 was a critically dry year, and for such conditions water supply and instream habitat are most challenged.

The Base Hydrology Model is used to compile and calculate daily streamflow records for Laguna, Majors, Liddell and Newell Creeks, and for the San Lorenzo River at Tait for the period WY1936-2015. As a result, daily flow records for a majority of the water years within the historical analysis period are calculated using the regression relationships (compare historical analysis period against available gaging records in Table 1). Consequently, we assume that the inter-basin and intra-basin flow conditions captured by the years of overlapping gaging records are consistent with conditions during correlated years. We have no reasonable way to examine this assumption. However, the Big Trees record suggests that general land use practices and other activities that could affect runoff production have not changed considerably during the historical analysis period, which by extension we assume for the other basins as well. Last, based on the distribution of gaged vs. modelled flows (Figure 6) we assume that the regression relationships reflect the average, or most probable range of streamflow conditions in the source streams for any given set of precipitation, soil saturation and groundwater conditions, etc.

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# 3. Overview of Base Hydrology Model Application to Potential Climate Change Conditions

Climate change (CC) work for the City of Santa Cruz WSP has been ongoing since 2008. In our first step we incorporated CC into the WSP planning process. This involved a substantial literature review to gain an understanding of CC science for, in particular, California. An outgrowth of this led Balance to contact Ed Maurer at Santa Clara University to seek expert guidance on how to set-up a simplified analysis for the WSP using CC information. Guidance and suggestions resulted in the development of a water balance model (WBM), which serves as the basis for the CC modeling reported here. We run the WBM with CC data acquired through Cal–Adapt for the period WY2020–70 (CC analysis period).

At the time our CC work was getting started, the Cal–Adapt program (www.cal-adapt.org/about/) was in the early stages of implementation. The development of Cal–Adapt was in part motivated by then California Governor Schwarzenegger's November 2008 Executive Order S-13-08, which specifically asked the Natural Resources Agency to identify how state agencies can respond to CC. In essence, Cal–Adapt is a hub for climate change data relevant to adaptation planning in California. In more recent years however, Cal–Adapt has also grown to offer web-based analysis of CC data available via the Cal–Adapt website. In the remainder of this technical memorandum we review our approach to the WSP CC analysis, and the data sets we used to complete the work.

## 3.1. Development of Projected CC streamflows

Development of projected CC streamflows for the WSP follows three main steps, with intermediate work completed in between each step (Figure 7).

### Step 1: The Water Balance Model (WBM)

The first step focuses on development of the WBM, specified as:

$$Q = P + B - Et_o - R. \tag{1}$$

The WBM is a water accounting statement which specifies that streamflow (Q) is the difference between additions and losses to the water budget. Additions in this case are the upstream contributing watershed average precipitation ($P$) and baseflow ($B$); losses are the upstream contributing watershed average potential evapotranspiration ($Et_o$) and groundwater recharge ($R$). All terms in Equation 1 are expressed in units of feet per day, and streamflow is calculated with units of cubic feet per second, summed at the monthly time step (cfs-days). The step from units of feet per day to streamflow is achieved by multiplying the water balance result over the upstream drainage basin area. Precipitation is provided directly through the CC projections, and differs depending on the projection that is used.

In contrast, baseflow is a calculated quantity, which we approximate as a backward looking function that tracks the general wetness conditions:

$$B = \left( \sum_{j=t-1}^{j=t-6} P \right) * Co_s * K_b. \tag{2}$$

Summation occurs over the prior five months average daily rainfall, $Co_s$ is the carry-over-storage of shallow groundwater and $K_b$ is the estimated proportion of the prior months precipitation and carry-over storage available as baseflow. $K$ can take values between 0 and 1, and here has a value of 0.099. Testing indicates that the WBM is sensitive to $K$ values > 0.0999, and relatively insensitive to values much less than 0.099. We calculate the carry-over-storage as a departure of recent precipitation trends from the analysis period average:

$$Co_s = \frac{\frac{1}{10}\left(\sum_{j=t}^{j=t-10} P\right)}{\overline{P}}. \tag{3}$$

The historical analysis period average precipitation $\overline{P}$ is 0.0102 feet per day.

Potential evapotranspiration is calculated according to the adjusted Blaney-Criddle equation:

$$Et_o = pr([0.75 * \overline{T}] + 0.5), \tag{4}$$

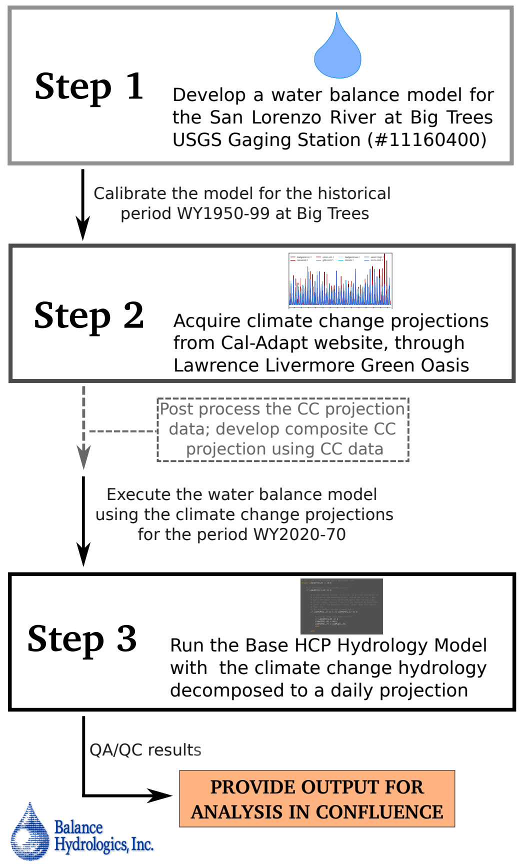


Figure 7: Steps followed to apply climate change projections to the Base Hydrology Model. The steps are discussed in the main text.

where $pr$ is the average proportion of daylight hours for the Santa Cruz region (37.5 degrees north latitude) and $\overline{T}$ is the contributing watershed average monthly air temperature in degrees centigrade. The adjusted Blaney-Criddle equation produces an $Et_o$ curve that rises to a maximum during the late summer months and achieves a minimum during the early winter months of December and January. See the following website for more details regarding the Blaney-Criddle equation: http://www.fao.org/3/s2022e/s2022e07.htm.

Recharge is calculated as a monthly apportioning function:

$$R = \frac{P_m}{\left(\sum_{m=1}^{m=12} P_{m,n}\right)} * K_r. \tag{5}$$

The subscript $m$ is the present month in the present water year, and $n$ is the present water year in the data set. The term $K_r$ is a constant annual recharge amount that here has a value of 0.328 feet per year, based on estimates we developed using hydrologic records at Liddell Spring. Equation 5 distributes $K_r$ based on the present month's proportion of the water year total precipitation. This approach likely underestimates recharge in wet years, and over estimates it in dry years. However, fixing $K_r$ to a constant value yields WBM performance that is acceptable, as we will discuss further in the next section. Second, our approach to use of a fixed $K_r$ value also avoids more sophisticated approaches that would require data that is not readily available.

Last, it is important to highlight that the WBM is primarily dependent on monthly precipitation, as well as average monthly air temperature (Equations 1–5). These dependencies provide the opportunity to apply the WBM to evaluate how future plausible climate conditions of precipitation and air temperature may affect monthly streamflow totals in the Santa Cruz region. Next we discuss how the WBM was calibrated in order to produce plausible estimates of monthly streamflow at Big Trees.

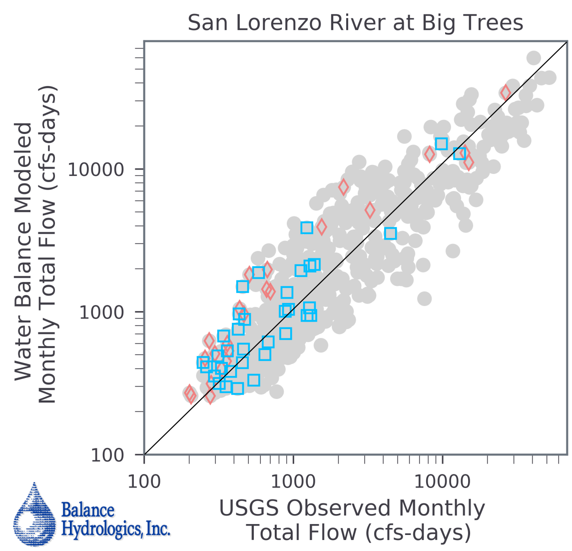


Figure 8: USGS observed monthly total streamflow vs. modelled monthly total streamflow using the Water Balance Model. The red diamonds cover the WY1976-77 drought and the blue squares cover the WY1989-91 drought. 1:1 line shown for reference.

## Water Balance Model Calibration

The WBM (Equations 1–5) is calculated using local gridded climatological data (Maurer and others, 2002) available through Cal–Adapt for the period WY1950-2000. We use gridded climatological data because it is available at the same spatial resolution as the CC projection data. As a result, the WBM is constructed and used with data that are spatially consistent. The calculated WBM monthly total streamflows are then plotted against the associated observed data reported for Big Trees. Best fit lines between the two data sets provide the calibration curves for the WBM.

The goal of the calibration process is to use Equations 1–5 to predict monthly total streamflow at Big Trees as best we can given the limitations of the WBM. In particular, we seek good model performance for dry or drought years. To achieve the best approximation of drought conditions with the WBM, we treat the recharge (R) and baseflow (B) terms of Equation 1 as fitting parameters. This means we tested different ways of calculating both terms until we minimized misfit between observed and modelled, and reasonably reproduced dry and drought streamflows. Once satisfied with the WBM performance, we use the calibration curves to transform the WBM streamflows to magnitudes which occur within the observed range of streamflows at Big Trees (Figures 8 and 9).

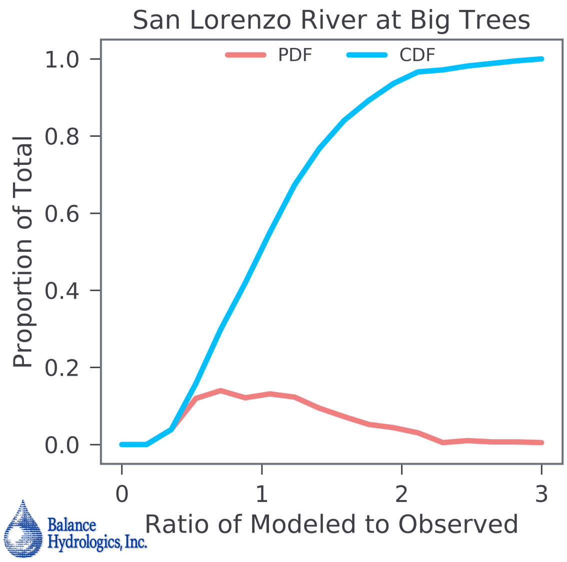


Figure 9: Probability distributions of the ratio of modelled to observed streamflows at Big Trees for the period WY1950-2000. Modelled streamflows were calculated with the Water Balance Model (Equations 1–4) and the calibration curves. PDF stands for the probability distribution function, and CDF for the cumulative distribution function.

The calibrated WBM performs as expected with respect to testing against the observed streamflow record at Big Trees, and successfully approximates flow magnitudes during the driest months on record for the period WY1950–2000 (Figures 8 and 10). Outside of the driest months, there is a clear linear correlation between observed and modelled flows, and the calibrated WBM calculates a majority of Big Trees flows within a factor 2 and less of the observed flows (Figure 9). In more detail, roughly 70% of modelled flows are within a factor 0.6–1.5 of observed flows (Figure 9). Beyond these specific results, the overall skill of the WBM is reasonable, with a relative error < 1% when comparing monthly mean streamflows over the calibration period (Table 3). As mentioned above, a suitably calibrated model is expected to have a relative error < 10% (Elsner and others, 2010). The model is capable of capturing observed year-to-year fluctuations and trends from wet to dry, and all the other climatological combinations (Figure 10). This result indicates the WBM can track how climatological conditions drive year-to-year fluctuations in streamflow, which makes intuitive sense given how the model is constructed (Equations 1–5).

Table 3: Summary Information for Water Balance Model Calibration.

| San Lorenzo River | Monthly mean for calibration period | | |
|---|---|---|---|
| | Obs (cfs-days) | Sim. (cfs-days) | Rel. error (%) |
| Big Trees (11160500) | 4028.4 | 4026.9 | 0.03 |

1. Calibration period WY1950–2000.
1. Relative error = $(Sim. - Obs.)/Obs.$

It is important to point out that the WBM does not contain a change of storage term, which would be typical for mass balance statements. We do not include a change of storage term because we do not know how groundwater storage within the study area changes over the period WY1950–2000 (i.e. the calibration period), and consequently, we cannot constrain storage fluctuations under future plausible climates. We address the model shortcoming with respect to groundwater storage through our approaches to estimate the baseflow and recharge terms of Equation 1. Additional model limitations are presented at the end of this section.

**Step 2: Acquire Climate Change Projections**

All CC projections used as a part of the WSP analysis were acquired via the Cal-Adapt website (Figure 7). Projected climate data have a monthly time step and include precipitation, minimum air temperature and maximum air temperature. Values for each of these three climate parameters represent spatial averages over model grid cells which contribute runoff to the Big Trees gaging station. The spatial resolution of the different CC projections used in the WSP planning process varied, and is discussed in the following sections for each projection.

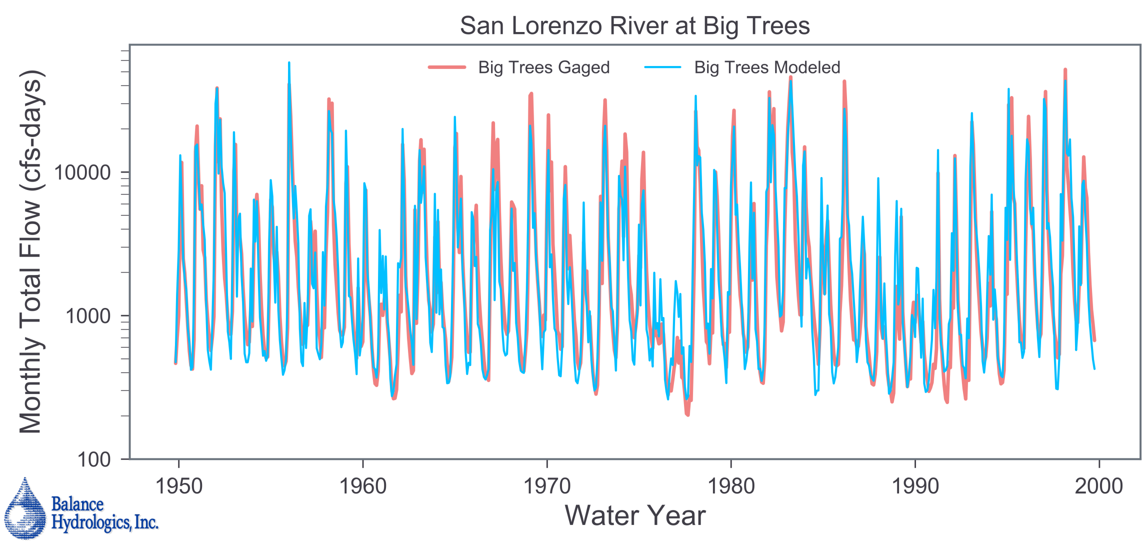


Figure 10: Comparison of observed and modelled monthly total streamflow for the Big Trees station for the period WY1950–2000. Modelled streamflows were calculated with the Water Balance Model (Equations 1–4) and the calibration curves.

***CC Projection 1***

The first CC projection used in the WSP planning process is the CMIP3 GFDL2.1 A2 data set (Projection 1), downscaled from Global Climate Model (GCM) simulations to grid cells with a spatial resolution of 1/8°. This resolution roughly equates to model grids that measure 7.4x7.4 square miles. Downscaling was performed by others and occurred following the Bias Correction and Spatial Disaggregation procedure (BCSD) (Wood and others, 2004). The abbreviation parts of the data set name include important information about the projection:

- **CMIP**: Stands for the *Coupled Model Intercomparison Project* (see https://pcmdi.llnl.gov/mips/ for more information about CMIP in general);
- **3**: The number 3 stands for the third phase of the collaborative effort;
- **GFDL**: The abbreviation GFDL stands for the Geophysical Fluid Dynamics Laboratory;

- **2.1**: The number 2.1 refers to the GFDL Global Climate Model (GCM) version 2.1; and
- **A2**: The abbreviation refers to the emissions scenario.

CMIP3 and all other CMIP phases are numerical experiments completed to help climate scientists carry out basic research using GCMs. CMIP3 was specifically completed in support of developing the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2007). The IPCC is administered under the auspices of the World Meteorological Organization, a specialized agency of the United Nations Environment Program. We selected this particular projection from among several available at the time through Cal–Adapt because the A2 emissions scenario projected large average temperature increases in the range of 2–5.4°C (IPCC, 2007) by 2090–2099, relative to 1980–1999 temperatures. Increases of local temperatures over time reduces streamflow for any given precipitation event due to higher evapotranspirative losses (Equation 4). Consequently, this means less instream water for coho salmon and steelhead trout, and less streamflow available for water supply.

The Projection 1 precipitation data was post-processed because after initial inspection it was noted that the data set is wet, and quite wet when compared to the historical period record (Figure 11). It is known that the BCSD downscaling process may introduce a wet bias into modelled data relative to the historic calibration period record (Stratus Consulting, 2015). Therefore, an alternative approach was used to develop the projected precipitation and air temperature records. The Projection 1 data set downloaded from Cal–Adapt was adjusted according to the *Delta* method (Stratus Consulting, 2015; Hamlet and Lettenmaier, 1999), which was termed the transient record. The transient record preserves the distribution of events present in the raw projected CC data set (i.e. the variability of the raw GFDL2.1 A2 record), but scales it according to recorded monthly rainfall depths and air temperature magnitudes reported for the Santa Cruz region (NOAA and CDEC CRZ Station). The transient precipitation record is drier than the Projection 1 record, but preserves the year–to–year variability of the unadjusted data (Figure 11). The transient air temperatures are warmer than the Projection 1 record. Combined, the transient monthly precipitation, minimum air temperature and maximum air temperature records were used as the Projection 1 data set in the WSP planning analysis.

***CC Projection 2***

The second CC projection used in the WSP planning process represents a statistical combination of four different downscaled GCMs produced as a part of CMIP5 (Projection 2). The CMIP5 experiment is the basis of the Fifth Assessment Report (AR5) of the IPCC, which was carried out with new emissions scenarios known as Representative Concentration Pathways (RCP) (IPCC, 2014). We used projections developed with RCP8.5, which represents the radiative forcing at year 2100, with units of Watts/square meter. The emissions scenario RCP8.5 represents very high Green House Gas (GHG) emissions as understood at the time when AR5 was completed. In contrast to Projection 1, Projection 2 data were downscaled to a spatial resolution of 1/16°, or grids that measure roughly 3.8x3.8 square miles. CMIP5 data available via Cal–Adapt were downscaled two different ways, and used selected data that were specifically downscaled using the BCSD approach, consistent with Projection 1.

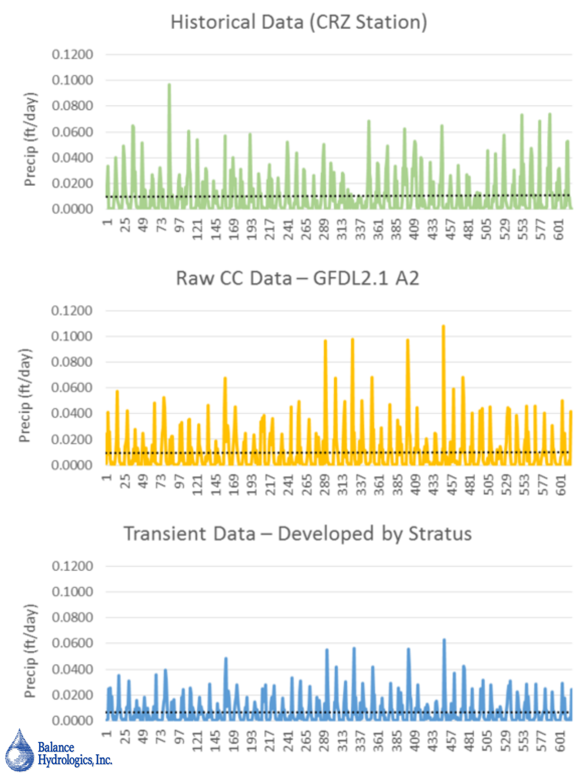


Figure 11: Precipitation data for the Santa Cruz region. Each data set covers a 50-year time span, and the x-axis of each plot is expressed in months since start of record – 1950 for historical data and 2020 for CC data. The monthly total precipitation totals were divided by the number of days in each month to yield precipitation in feet per day (y-axis). The transient data set was developed by Stratus Consulting.

Cal–Adapt and its partners made 10 different specific projections available as a part of the CMIP5 data set. After weeks of testing, four out of the ten individual projections were used as the basis for calculating the statistical CC projection (recall from Projection 1 that the abbreviation for each model cited next conveys important information about each source):

- ACCESS1-0.1.rcp85: Australian Community Climate and Earth System Simulator 1;
- CCSM4.1.rcp85: Community Climate System Model 4;
- HadGEM2-CC.1.rcp85: Hadley Global Environment Model 2 – Carbon Cycle;
- CanESM2.1.rcp85: Canadian Earth System Model 2.1;

The four chosen data sets that we used to build Projection 2 are on average moderate in terms of precipitation when compared to all ten models available for planning use (Figure 12). However, even though these four CC projections are moderate as defined by departures from the cumulative mean across all 10 models, the chosen data sets contain quite dry and wet conditions when compared to historical conditions. This point will be clear when we present the precipitation record for Projection 2 below.

At this point we have four different monthly CC projections to use for water supply planning under Projection 2. We decided that rather than chose one of the four projections, we would build upon the four and develop a statistical CC projection. We choose this approach for Projection 2 because it is not possible to *predict* future climate.

The strategy used here to develop a statistical CC projection with the four identified times series involves a stochastic modeling technique, illustrated schematically in Figure 13. The stochastic approach requires the

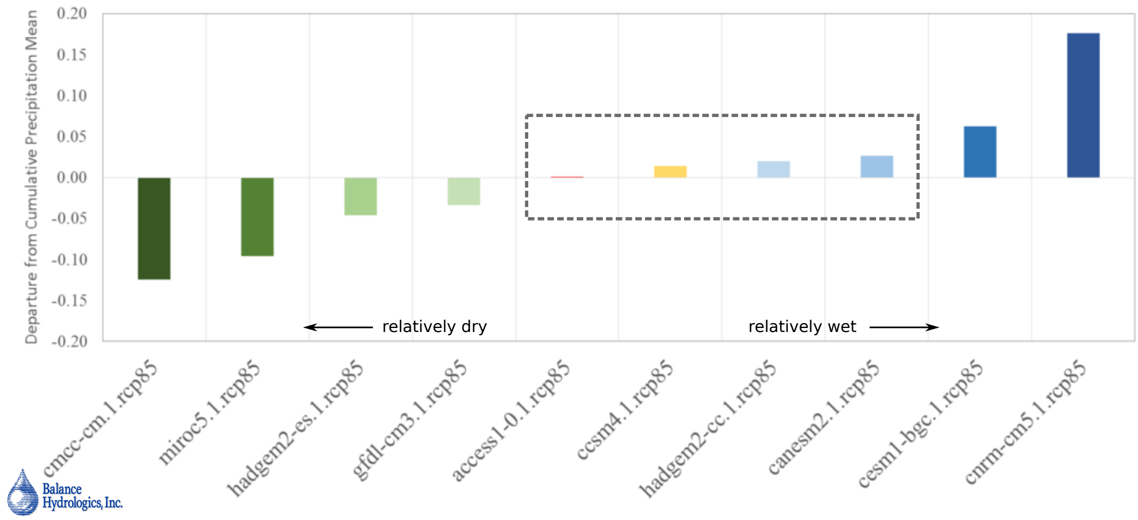


Figure 12: Model specific departure from the cumulative precipitation mean for all ten downscaled CMIP5 climate projections of precipitation over the CC analysis period. The plot provides an indication of which projected data sets are relatively dry, relatively wet and comparable to the cumulative mean across the projection data sets. The four models used to build Projection 2 are indicated by the dashed box.

assumption that the four moderate climate projections approximately capture the *expected range* of monthly and annual precipitation (and air temperature trends) totals for the CC analysis period. The *expected range* assumption permits us to numerically expand the records of monthly precipitation (and air temperature) for the four moderate models to monthly arrays that are > 4 in size. Here, we chose 100 equally incremented values within the range set by the four projection minimum and maximum values for each month of the CC analysis period. As a result, the sample size of future plausible climate conditions increases from 4 to 100 for any given month in the CC analysis period.

Expanding the projection sample size from 4 to 100 inclusive samples is analogous to assuming that a relatively large number $N$ of GCMs would yield, after sampling, a downscaled distribution of climate projections that would approach the distribution defined by the 100 equally incremented values across all months of the CC analysis period. For relatively dry conditions, the 100 equally incremented values differ by approximately 1 millimeter/month (mm/month). This difference increases to roughly 4 mm/month for progressively wetter conditions. Although 100 future plausible climates may be a small sample size, it does serve the purpose of reducing our reliance on only 4 projections of future climate. The more critical issue, however, is how the sequence of month-to-month, or year-to-year climate might vary in the future.

Our goal is to develop a CC projection that reflects the general consensus among California climate scientists of more pronounced droughts, more severe floods and warming temperatures for the central coastal region of the State (Swain and others, 2018). We address this goal through use of percentile statistics (e.g. 10th, 20th, etc. percentiles), and add the requirement that the statistics are robust. For example, if we calcu-

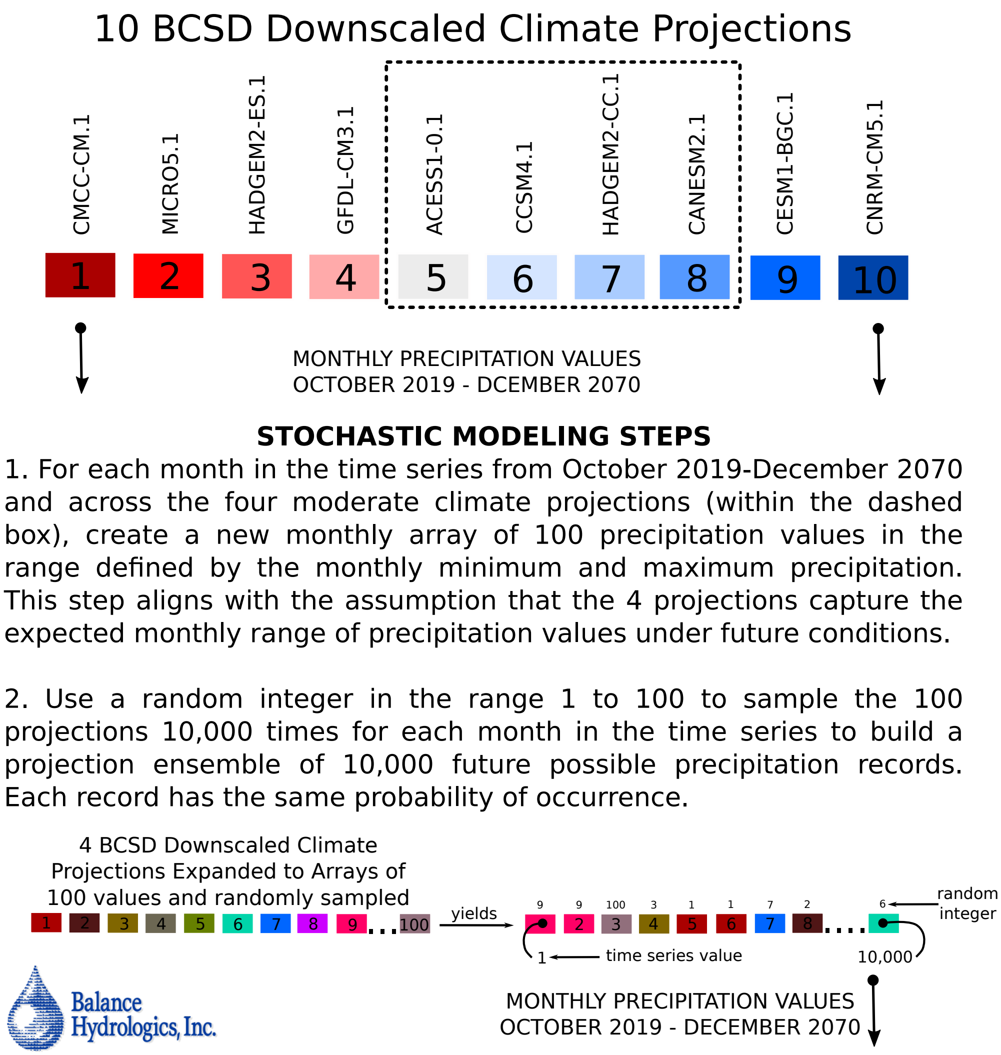


Figure 13: Schematic of the stochastic modeling workflow used to develop climate projections of precipitation and air temperature with a population of 100 samples. This population is randomly subsampled 10,000 times to develop a statistically stationary distribution of precipitation and air temperature.

late the various percentile statistics for the 4 moderate climate projections and compare these to statistics for the expanded sample of 100, it is no surprise that there are differences, some of which are substantial. This raises the issue of sample size and uncertainty. To overcome this difficulty, we randomly subsample (with replacement) the monthly arrays of 100 monthly values of precipitation and air temperature until change of the percentile statistics approaches zero. This occurs when the total number of time series > 5,000, and here, we produced 10,000 randomly constructed CC time series of precipitation and air temperature.

We calculated percentile statistics for each month of the CC analysis period using the 10,000 different monthly values for precipitation and air temperature. We also calculated percentile statistics for annual conditions. Next, we drew from the underlying annual percentile statistics in a manner which tracks overall dry, average and wet periods (Figure 14), as well as cool, average and hot conditions. After several rounds of testing, we selected the 10th percentile for dry and cool conditions, the 50th percentile for average conditions, and the 75th percentile for wet and hot conditions. Next, we needed to determine whether a future year (and the months of that year) was dry (cool), average or wet (hot).

We used the *expected range* magnitude relative to the median value to determine if any given year of the CC analysis period was likely to exhibit average vs. dry, or wet conditions. We choose three general rainfall conditions in order to keep things simple, yet adjust model calculations based on clear differences in rainfall. Recall, the *expected range* magnitude is the difference between the maximum and the minimum for the four chosen CC projections. If the *expected range* was larger than the median value for any given year, that year was deemed most likely to exhibit dry or wet conditions. On the other hand, if the *expected range* was less than the median value for any given year, that year was deemed most likely to exhibit conditions of the central tendency.


Figure 14: Heat map of population statistics for Projection 2 developed with the stochastic sampling (Figure 13). The y-axis plots how the statistics shown on the x-axis vary from month to month over the CC analysis period. Darker blue colors indicate relatively wet periods, and stronger yellow colors indicate dry periods. An example wet and dry period are indicated.

The decision to select the $10^{th}$ vs. $75^{th}$ percentile value was determined by comparing the $50^{th}$ percentile precipitation for each associated year vs. the 50th percentile for all years of the CC analysis period across all 10,000 samples. Years with values less than the CC analysis period 50th percentile value were considered dry, and the $10^{th}$ percentile was selected. Years with values greater than the projection period $50^{th}$ percentile value were considered wet, and the $75^{th}$ percentile value was selected. This manner of record construction means that years, rather than months were selected to be dry, normal or wet. We chose the annual basis to guide record construction in order to be consistent with how we develop daily hydrographs from the monthly data (discussed in the subsequent section), and because the project team has a higher confidence in annual projections of climate variables.

The Projection 2 precipitation time series contains a range of values that are generally consistent with the range of historical observations (Figure 15). However, the Projection 2 record qualitatively displays increased year to year variability relative to historical conditions, as well as consecutive years of relatively large and small precipitation totals. For example, WY2020–22 are as dry as the WY76-77 drought, but contain a third relatively dry year. On the other hand, WY2061–64 are as wet, and slightly wetter, compared to WY1956, but contain four relatively wet years in a sequence as opposed to one single wet year. This means that Projection 2 is generally consistent with previous work that suggests the central coast of California will have drier dry periods, wetter wet periods, and increased year-to-year variability that reflects abrupt switches between dry and wet conditions, and vice versa (Swain and others, 2018).

The Projection 2 precipitation time series also reflects the dry and wet trends of the overall statistics drawn from the sample of 10,000 plausible climate conditions (cf. Figures 14 and 15), which is a function of the four CC projections we choose to use. The Projection 2 maximum air temperature shows a steady increasing trend over the CC analysis period, as expected (Figure 16). However, the magnitude of temperature increase is low relative to most estimates. This result means that projected streamflow could attain lower values under Projection 2 (Equation 4) if we sampled to produce a warmer air temperature trend. We choose not to pursue this path, however, because Projection 3 was developed to reflect more severe climate conditions through much warmer air temperatures (discussed in the next section).

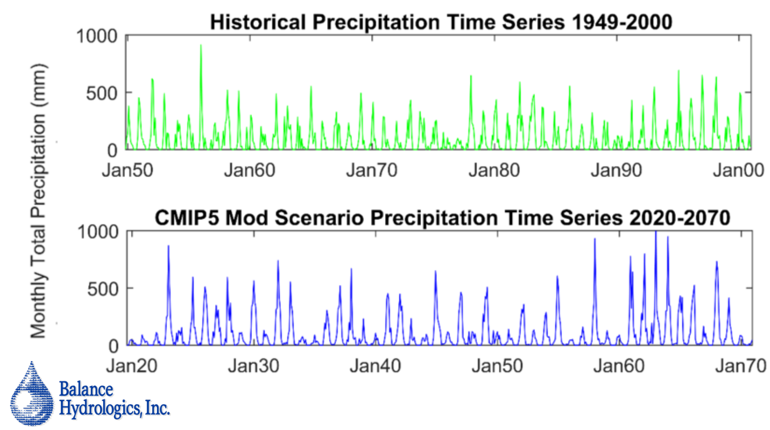


Figure 15: Comparison of an historical period observed precipitation for Santa Cruz vs. the Projection 2 precipitation developed using the stochastic modeling approach.

***CC Projection 3***

The Projection 3 CC data set was developed as part of the Mid–County Groundwater Basin Sustainability Plan (King and Tana, 2016). The Projection 3 approach makes use of the historical climatology for the period WY1977–2016 as a *catalog* which is sampled to develop a random sequence of annual conditions weighted by air temperature. The catalog approach has been used elsewhere in the Santa Cruz region and in other parts of California (Metropolitan Water District of Southern California, 2016; Young, 2016). Air temperature weighting was specifically used in order to produce a future climate condition which has a warming air temperature trend consistent with regional expectations from CC research (Swain and others, 2018).

The original climate catalog was used to develop a record for the period WY2016–69. However, we removed data for the period WY2016–19, and added one year of data at the end of the time series in order to line the time series up with the CC analysis period. The raw climate catalog is a just sequence of years (e.g. 1977, 2015, 1998...) of observed climate conditions. As a result, we used the historical climatology associated with the specific climate catalog sequence to construct the monthly precipitation and air temperature records of Projection 3 that are run through the WBM. See (King and Tana, 2016) for more details.

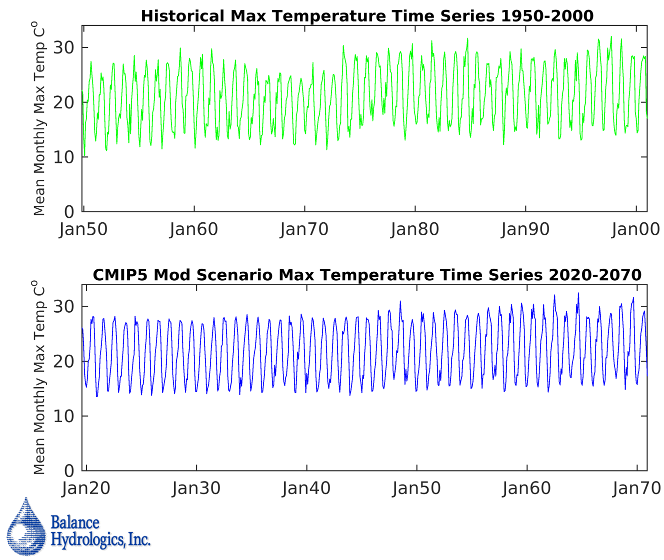


Figure 16: Comparison of an historical period observed maximum air temperature for Santa Cruz vs. the Projection 2 maximum air temperature developed using the stochastic modeling approach.

***Comparison of Projections 1–3 and Historical Gridded Climate Conditions***

We compare and contrast historical and projected climate conditions by plotting departures of monthly total precipitation and average air temperature, relative to historical averages for the period 1950–2000 (Figure 17). Furthermore, we focus the comparison on the winter months of December–March because that is when most precipitation falls. Monthly climate conditions can fall within one of fours quadrants relative to historical averages: dry and cool, wet and cool, dry and warm, and wet and warm (top plot of Figure 17). Use of this type of quadrant plot makes comparison across climate conditions straightforward.

The Gridded Historical precipitation distribution (Maurer and others, 2002) is left skewed, with a greater proportion of months that have less rainfall than the average. Consequently, there were fewer gridded years that were wet relative to the average, but wet years departed more strongly from the average, as shown by probability density contours that extend beyond a value of 2. Dry and wet months were both cool and warm, relative to average gridded conditions. Furthermore, monthly air temperature departures approach a normal distribution, in contrast to precipitation.

The winter month conditions of CC Projections 1–3 differ from the historical distributions of precipitation and air temperature (lower right–hand 3 plots of Figure 17). Projection 1 is in general drier and warmer than historical average conditions, which was mentioned earlier in this section (Figure 11). In contrast to Historical Gridded and Projections 2 and 3, the distributions of precipitation and air temperature of Projection 1 approach normal distributions over the CC analysis period. This highlights that Projection 1 lacks the increased rainfall variability that climate scientists expect for Central California, but reflects the rise of average air temperature (Swain and others, 2018). As a result, water supply planning with Projection 1 is understood to reflect dry and warm conditions.

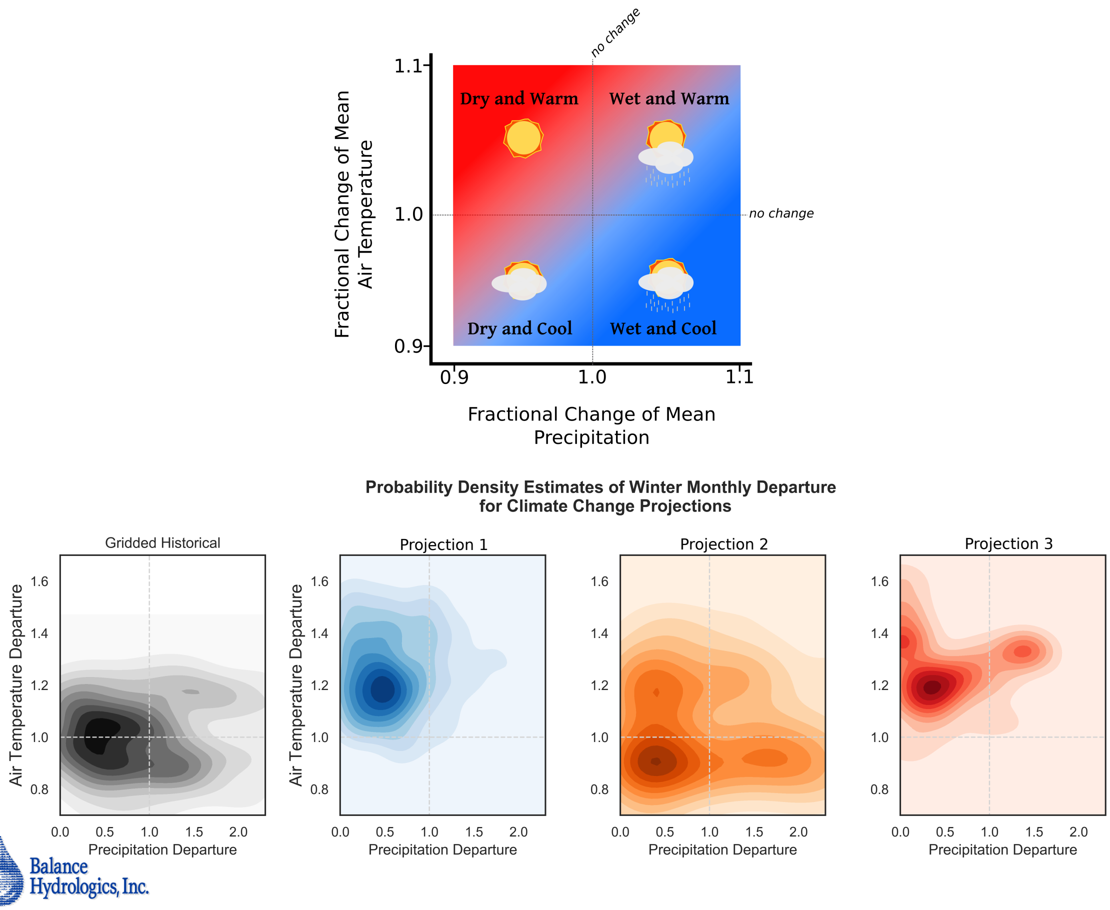


Figure 17: Summary of winter months climate conditions for the three CC projections used in WSP planning analysis. The top plot is a conceptual map that shows how different climate conditions can be understood relative to the historical gridded average annual precipitation and air temperature (coordinates of [1,1] in the plot). The bottom four plots show probability density estimates for the distributions of monthly total precipitation and monthly average air temperature over the months December–March for the historical analysis period and the three CC projection data sets. The probability density estimates provide a quick way to visually understand differences between the four data sets. Density estimates calculated using the SciPy python library.

Projection 2 exhibits a more variable future climate in terms of precipitation and air temperature, compared to Gridded Historical and Projections 1 and 3 (Figure 17). As discussed earlier, this was the intent of Projection 2. There are a concentration of winter months with cool and dry conditions, warm and dry, and cool and wet. However, there are fewer months that are warm and wet. The cooler underlying temperature trend of Projection 2 is evident in the distribution of temperatures relative to the historical average gridded condition. Nonetheless, Projection 2 does contain winter months that are warmer than historical average gridded conditions, consistent with expectations (Figure 17). Water supply planning with Projection 2 is understood to reflect more variable conditions in terms of precipitation, but air temperatures are generally cool.

Projection 3 is similar to Projection 1, but with a greater proportion of winter months that are wet and warm. Projection 3 also contains winter months that are the driest and warmest of any CC projection used for WSP (Figure 17). Compared to Projection 2, however, precipitation has less overall variability. Consequently, water supply planning with Projection 3 is understood to reflect somewhat severe dry and warm climate conditions. Overall, CC Projections 1–3 provide a wide range of future conditions relative to the historical gridded climate. Most importantly, this wide range of conditions yields a strong basis to test how projected instream flow conditions perform relative to historical conditions (Appendices 1b and 1c).

**Step 3: Run the Base Hydrology Model**

***Develop Daily Streamflow records***

We developed daily streamflow projections at Big Trees in two different ways using the monthly streamflows of Projections 1–3. In the first method we averaged daily streamflow across all months of the historical analysis period at Big Trees. This step yielded an average daily streamflow hydrograph for each of the 12 months in a water year. We then summed the average daily streamflow for each month, and used the sums to calculate the proportion of flow for each day of each month of the water year calendar. These daily flow proportions were then used to distribute the Projection 1 total monthly streamflows at Big Trees, resulting in a projected daily streamflow hydrograph for the CC analysis period.

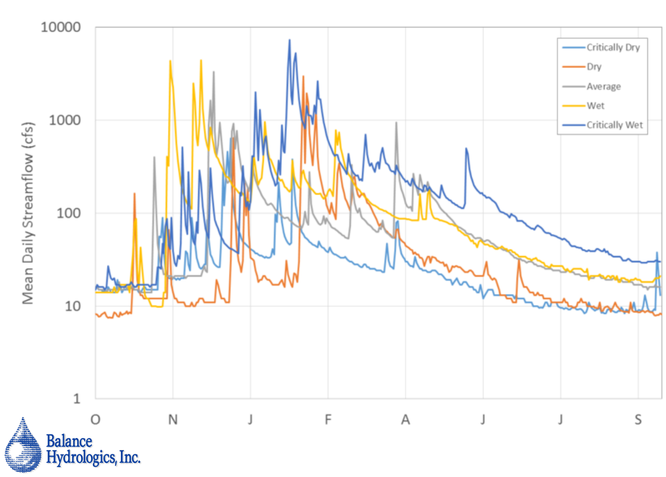


Figure 18: Characteristic annual hydrographs for critically dry, dry, average, wet and very wet total annual flow conditions at Big Trees.

The daily streamflow hydrograph for Projection 1 was post-processed to smooth abrupt and unreasonable changes in flow that occurred between days within the CC analysis period, at month-to-month transitions, and at the end of each water year (i.e. September 30$^{th}$). Where applied, smoothing of the daily flow record was done with a zero-order forward and reverse digital filter. This means that the location of any given peak in time is not affected, but its amplitude is adjusted based on the nature of flows forward and backward in time from any particular position, based on a specified filtering length and computed flow differences. This particular filter has the advantage of matching initial conditions well. The smoothing filter length was chosen to minimize the sum of differences between the corrected and the filtered record (< 0.1% difference in total flow). It is important to point out that even though Projection 1 data were smoothed, the operation did not result in the loss of peak flow events, etc. that result from precipitation events. The first approach yielded reasonable daily flow hydrographs for each year. However, it has the disadvantage of using a single hydrograph shape for each future year, and it requires data filtering to produce a smoothly varying flow condition at monthly and water year transitions.

For Projections 2 and 3 we applied a second and improved method to develop projected daily streamflows, after additional work carried out over the span of about a year indicated improvements to the daily records was possible. We borrowed from the climate catalog approach (King and Tana, 2016; Young, 2016) and identified characteristic annual hydrographs for the five different hydrologic categories calculated for the Big Trees gage (presented within Section 1 above, and discussed in Appendix D-3 in relation to instream flow rules): critically dry, dry, average, wet and very wet (Figure 18). We applied each characteristic hydrograph to the projections based on the annual hydrologic characteristic of each future year in Projections 2 and 3. For example, if WY2042 was a very wet year, we decomposed the projected monthly flow at Big Trees into an annual hydrograph by scaling the total 2042 annual flow over the very wet characteristic hydrograph. In order to compare model results between the historical and CC analysis periods, the 5-category hydrologic conditions were calculated for the historical analysis period, and then used as the hydrologic basis for the CC period. This is equivalent to using the historical conditions as the reference through which to understand how CC may affect hydrologic conditions at the annual time scale.

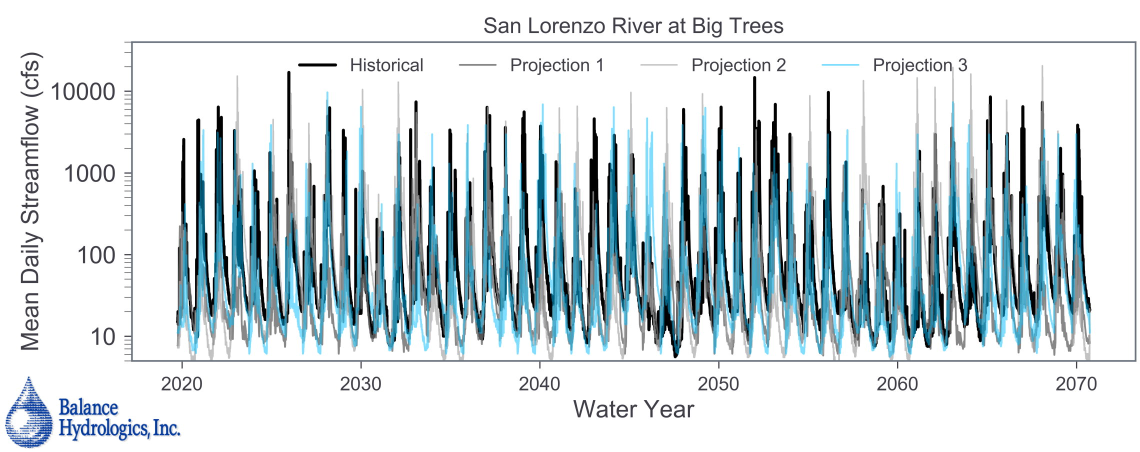


Figure 19: Summary of the daily streamflow hydrographs at Big Trees for the historical period WY1950-2000 observed streamflows, and the Projections 1–3 for the CC analysis period. Note that in this case the historical record does not correspond to gridded climate conditions (Maurer and others, 2002).

The second approach, namely the one that we used for Projections 2 and 3, has the advantage of using multiple hydrograph shapes that are classified according to dryness and wetness conditions (City of Santa Cruz Water Department, 2009), and the resulting time series only require filtering at the water year transitions to produce smoothly varying flows. In both cases nonetheless, we have no way to assess the skill of the decomposition approach because we are using CC projections made at the monthly time step. As a result, the daily hydrographs represent one outcome out of a very large possible number of future outcomes. The daily hydrographs for Projections 1–3 for the CC analysis period are shown in Figure 19. The historical observed hydrograph at Big Trees for WY1950–2000 is shown for reference.

***Run the Base Hydrology Model***

The daily streamflow records for Projections 1–3 at Big Trees are loaded into the Base Hydrology Model to develop CC hydrology for all source streams of the City. Daily flows for all source streams are then evaluated against instream flow rules (Appendix D-3), and remaining flows are apportioned to water supply availability (Appendix D-2).

## 3.2. Limitations and Assumptions for CC Analysis

Many assumptions were made to apply the Base Hydrology Model to CC analysis. Here we review some important ones. First and foremost, the analysis we have completed is intended as a means to evaluate changes in streamflow under future conditions, and primarily in terms of drought conditions and baseflows. We chose this focus because it is during these times that water supply and instream habitat conditions are most challenged. Furthermore, the collective approaches taken to yield projections of future daily streamflows was done in order to make useful comparisons to observed historical conditions, and between differing CC projections. As a result, our projections of daily streamflow for the three CC conditions should not be interpreted as *predictions* of future streamflows.

Second, we assume that the CC conditions represented by Projections 1–3 offer plausible future conditions for the Santa Cruz region. Specifically, Projections 1–3 provide a reasonable basis for testing how the instream flow rules might affect habitat conditions and water supply availability under a changed future climate. This assumption is based on the range of future conditions represented by Projections 1–3 (Figure 17).

An additional and important assumption of our work is that hydrograph shapes and day-to-day distributions of flows observed in the past are reasonable bases to project daily flows in the future. We could have used daily flows produced in the process of downscaling climate models to the local scale. However, these flows were shown to over-estimate summertime and drought streamflows. Because of the sensitivity of coho salmon and steelhead trout under these conditions, this option was not pursued in favor of the WBM (Chartrand, 2018).

Third, we assume that the WBM as set-up for climate change analysis in support of the WSP and the Draft Environmental Impact Report will apply to CC conditions in the future. This assumption may turn out to be inaccurate if, for example, stands of redwoods within the source stream watersheds transition to a drier climate forest composition, because forest composition affects the watershed water budget. Last, we did not have a reasonable way to constrain instream conditions for the CC analysis period due to potential future operations of the Felton diversion, or the present water right required bypass flow on the San Lorenzo River. We note these two points because San Lorenzo River flow diversions due to the Felton diversion and the Pre-existing legal bypass are added to gaged streamflows within the historical analysis period to develop the associated estimates of unimpaired streamflows, which is the basis of the Base Hydrology Model. As a result and based on the best available information, we set the Felton diversion [see Appendix D-2 for details] to zero for the CC analysis period, and applied the Pre-existing legal bypass based on the historical data.

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## Appendix A: Regression Models Used in Base Hydrology Model

In the tables that follow, a number of abbreviations are used: H.C.-hydrologic condition; CD-critically dry; D-dry; A-average; W-wet; VW-very wet; BT-San Lorenzo River at Big Trees USGS 11160500.

Table A1: Regression Relationships used in Base Hydrology Model for Upper Stations

| Station | Regression Relationships | |
|---|---|---|
| | **Months** | **All Flows** |
| San Vicente SV [11] | Nov.-Apr. | $SV = 0.1025 * BT^{0.9161} + 0.65$ |
| | May-Oct. | $SV = 1.0^{-7} * BT^3 - 2.056^{-4} * BT^2 + 0.1382 * BT - 0.750$ |
| Upper Laguna LG [4] | **H.C.** | **SV flows < 1 cfs** |
| | CD and D | $LG = 0.4043 * SV^{0.1109}$ |
| | A | $LG = 0.5796 * SV^{0.0957}$ |
| | W | $LG = 0.7551 * SV^{0.088}$ |
| | VW | $LG = 1.0225 * SV^{0.0528}$ |
| | **H.C.** | **SV flows >= 1 and < 20 cfs** |
| | CD and D | $LG = 0.3987 * SV^{1.1047}$ |
| | A | $LG = 0.5452 * SV$ |
| | W | $LG = 0.748 * SV^{0.8944}$ |
| | VW | $LG = 1.019 * SV^{0.7931}$ |
| | **H.C.** | **SV flows >= 20 cfs** |
| | All | $LG = 0.5452 * SV$ |
| Upper Majors MJ [4] | **H.C.** | **LG flows < 1 cfs** |
| | CD and D | $MJ = 0.4455 * LG + 0.5257$ |
| | A | $MJ = 0.5574 * LG + 0.6361$ |
| | W | $MJ = 0.6148 * LG + 8721$ |
| | VW | $MJ = 0.6148 * LG + 8721$ |
| | **H.C.** | **MJ flows >= 1 and < 10 cfs** |
| | CD and D | $MJ = 0.9577 * LG^{0.7601}$ |
| | A | $MJ = 1.1947 * LG^{6766}$ |
| | W | $MJ = 1.4873 * LG^{0.581}$ |
| | VW | $MJ = 1.4873 * LG^{0.581}$ |
| | **H.C.** | **LG flows >= 10 cfs** |
| | All | $MJ = 0.2225 * LG^{1.3962}$ |
| Upper Liddell LD [9] | **H.C.** | **LG flows < 4 cfs** |
| | - | $LD = 1.8414 * LG^{0.1325}$ |
| | **H.C.** | **LG flows >= 4 cfs** |
| | - | $LD = 1.5252 * LG^{0.2727}$ |
| | **Months** | **All Flows** |
| Upper Newell NL [12] | Oct.-Sept. | $NL = 0.00906 * BT^{1.2484}$ |

1. Number in [] refers to the stations listed in Table 1.

3. Flows at Loch Lomond Dam calculated as: LLD=NL*(8.25/4.81)

Table A2: Regression Relationships used in Base Hydrology Model for Anadromous Stations

| Station | | Regression Relationships |
|---|---|---|
| | | **WY1936-69 and WY1986-15** |
| | **Months** | **LG flows <= 30 cfs** |
| | Oct.-Mar. | $ALG = -0.02370 * LG^2 + 1.72551 * LG + 0.16774$ |
| | **-** | **LG flows > 30 cfs** |
| | Oct.-Mar. | $ALG = (LG - 15) * 2$ |
| Anadromous Laguna ALG [5] | **-** | **All Flows** |
| | Apr.-June | $ALG = -0.00498 * LG^2 + 1.3233 * LG - 0.0730$ |
| | **-** | **All Flows** |
| | July-Sept. | $ALG = -0.0063 * LG^2 + 1.2436 * LG - 0.0906$ |
| | | **WY1970-85** |
| | **Months** | **All Flows** |
| | Oct.-Mar. | $ALG = 0.3247 * LG^{1.4939}$ |
| | **-** | **LG Flows <= 30 cfs** |
| | Apr.-June. | $ALG = -0.002 * LG^3 + 0.1046 * LG^2 - 0.1339 * LG$ |
| Anadromous Laguna ALG [5] | **-** | **LG Flows > 30 cfs** |
| | Apr.-June. | $ALG = 0.3247 * LG^1.4939$ |
| | **-** | **All Flows** |
| | July-Sept. | $ALG = 0.0415 * LG^{2.1328}$ |
| | | **WY1936-69 and WY1986-15** |
| | **Months** | **All Flows** |
| Anadromous Majors AMJ [8] | Oct.-Sept.. | $AMJ = 0.9248 * MJ^{1.0961}$ |
| | | **WY1970-85** |
| | **Months** | **All Flows** |
| Anadromous Majors AMJ [8] | Oct.-Sept. | $AMJ = 1.1863 * MJ - 1.1052$ |
| | **Months** | **All Flows** |
| Anadromous Liddell ALD [10] | Oct.-Sept. | $ALD = 0.44 * SV + LD$ |
| | **Months** | **All Flows** |
| Anadromous Newell ANL [13] | Oct.-Sept. | $ANL = 1.147 * LLD$ |
| | **All Months** | **BT flows < 30 cfs** |
| | - | $Tait = 0.94378 * BT^{1.0558}$ |
| San Lorenzo Tait Street [9] | **All Months** | **LG flows > 30 cfs** |
| | - | $Tait = 1.1689 * BT^{0.9928}$ |

1. Number in [] refers to the stations listed in Table 1

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**THE CONFLUENCE MODEL**

*Confluence*® is a model designed to simulate the operation of water supply systems to assist water supply agencies in evaluating and comparing water supply and infrastructure alternatives. The model allows simulations using a daily or monthly time step and can accommodate a wide variety of surface water and groundwater supplies, storage facilities, infrastructure, operating constraints, and flow regimes. The model produces a wide variety of outputs in both graphical and tabular form to enable water suppliers to focus on the results that are most important to their decision-making or that are needed to fulfill legal or regulatory requirements, including different representations of:

- Water supply reliability
- Water demands
- Source-specific production
- Surface water and groundwater storage levels
- Treatment and transmission throughput
- Fixed and variable costs

The data underlying all model outputs is easily exported to Microsoft Excel to further customize needed calculations and presentations.

A key driver of the simulations is the daily streamflows available for diversion, which constrain the potential diversion volumes for each day of the hydrologic period of record. The model can simulate system operations over the entire record or any subset of that record. Modeling runs can include single or multiple simulations depending on the questions being addressed.

Model inputs for system components are entered through an interactive schematic of the water supply system. A simple system schematic for the City of Santa Cruz (City) water system[1] is shown in Figure 1. For each source, storage facility, or treatment plant, the operating and infrastructure constraints associated with that system component (including the relevant set of available flows) can be edited from the "live" schematic by the modeler. In addition, the capacities, line losses, pumping costs, and other parameters associated with each portion of the transmission system are specified, which impose other constraints on system operations.

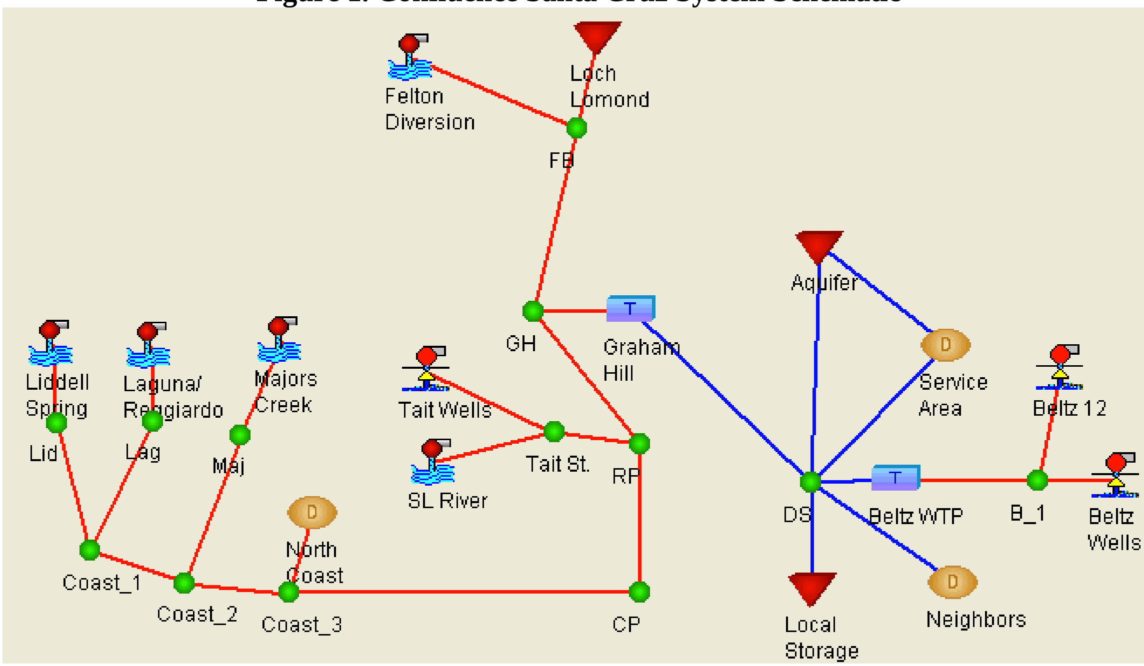
For each time step, the way the system is dispatched is determined by shadow prices assigned by the user to each supply source and each zone of surface water or groundwater storage. The simulation dispatches the system in increasing order of cost, as determined by these shadow prices and any other variable operating costs (e.g. pumping or treatment costs) associated with using each supply source. The supply source with the lowest combined cost is dispatched first, followed by the next highest cost, etc. The shadow prices assigned to storage zones are used to regulate the drawdown of surface water and groundwater storage.

[1] The City owns and operates a water system that diverts and serves water both within the City limits and outside of those limits. References to the City's water system, rights and supplies therefore refer to areas both inside and outside of the City limits.

Other model inputs include:

- The specification of the simulation parameters, including the flow years that are to be sampled and the operating years for which the simulation is to be run.
- The forecast of annual and monthly system demands.
- The specific outputs that are desired.

**Figure 1. Confluence Santa Cruz System Schematic**




Legend:

Demand node

Connection node

Surface water diversion

Groundwater extraction wells

Storage

Water treatment plant

## USE OF CONFLUENCE IN SANTA CRUZ

### History

Beginning with the City's Integrated Water Plan (IWP),[2] which was initially completed in 2003, the City has used Confluence to guide many key water resource planning efforts, including

[2] Gary Fiske & Associates. 2003. *City of Santa Cruz Integrated Water Plan, Draft Final Report*. June 2003

analyses of the potential impacts of climate change, assessments of potential water transfers to neighboring agencies, support for the City's 2015 Urban Water Management Plan,[3] and numerous evaluations of the impacts of potential supply, infrastructure and/or operational changes. In recent years, Confluence supported the City's Water Supply Advisory Committee (WSAC), as it engaged in an extended evaluation of many potential future water supply and infrastructure alternatives. Since 2008, Confluence has provided modeling support to evaluate and refine the numerous options considered by the City, the California Department of Fish and Wildlife (CDFW), the National Oceanic and Atmospheric Administration (NOAA), and the National Marine Fisheries Services (NMFS), to develop an Anadromous Salmonid Habitat Conservation Plan (ASHCP). This effort resulted in the development of minimum bypass flow requirements (Agreed Flows) to balance the habitat needs of anadromous species and the reliability of water supplied to City customers.

**Application of Confluence to the Santa Cruz Water Rights Project**

<u>Modeling Approach</u>

Confluence was used to model scenarios reflecting the Baseline, Proposed Project, and each of the Project Alternatives, all of which are described in the Appendix D Overview and in the body of the Draft EIR. In all cases, the goal of the model simulation is to maximize water supply reliability for City customers consistent with the relevant assumptions for each scenario. For example, for the Proposed Project, those assumptions include implementation of the Agreed Flows. Specifically, the objective is to minimize peak-season water shortages during the worst multi-year drought in the hydrologic record.

For all model runs, the first constraint on system operations is the daily available flows. As described in Appendix D-3, available flows for City diversions reflect the agreements reached in the City's ASHCP. The projected available flows can reflect historical conditions or projected conditions of climate change.

While the modeling approaches for the Baseline, Proposed Project, and Project Alternatives have much in common, the approach for those scenarios that include groundwater storage differs somewhat from those that do not.

*Modeling Logic without Groundwater Storage (Baseline and Alternatives 1 and 3)*

The lack of groundwater storage for the Baseline and Alternatives 1 and 3 results in an inability to eliminate the worst-drought shortage. Loch Lomond Reservoir is operated to minimize the magnitude of this shortage. Following are the key modeling steps, which are identical to those used in prior SCWD Confluence modeling.

[3] City of Santa Cruz. 2016**.** *City of Santa Cruz 2015 Urban Water Management Plan.* Prepared by the City of Santa Cruz, Water Department. August 2016.

1. Iteratively simulate the operation of the system for the worst multi-year drought and the three years of the hydrologic record prior to that drought.[4] Beginning the simulation 3 years prior to the beginning of the drought enables the drought to begin with a Loch Lomond Reservoir storage volume reflecting the prior wetter years.

2. Each iteration will adjust Loch Lomond Reservoir's rule curves and the number and costs of blocks of remaining demand that the reservoir must attempt to serve. The goal of these iterations is to regulate the reservoir drawdown so that the usable storage volume is exhausted at the end of the final month (October) of the drought, but no sooner. This will minimize the remaining water supply shortage.

3. With these rule curves and demand blocks, simulate the system over the entire hydrologic record.

*Modeling Logic with Groundwater Storage (Proposed Project and Alternative 2)*

The Proposed Project and Alternative 2 include ASR injection to and extraction from underground storage. The surface water and groundwater storage volumes are operated conjunctively[5] to minimize the ASR infrastructure required to achieve the reliability goal, to eliminate the worst-drought shortage. The modeling steps are as follows:

1. Iteratively simulate the operation of the system for the worst multi-year drought and the three years of the hydrologic record prior to that drought. In addition to enabling Loch Lomond Reservoir to start the drought with a storage volume reflecting the prior wetter years, this also reflects the assumption of a 3-year pre-drought fill period for groundwater storage. The storage zones and rule curves for Loch Lomond Reservoir and the underground storage are set to jointly fill and draw down both storage facilities.

2. Each iteration will adjust the ASR injection and extraction capacities to ultimately find the minimum infrastructure needed to eliminate the worst-drought shortage. The proper groundwater injection and extraction capacities are the minimum levels that will draw down the usable storage volumes of both Loch Lomond Reservoir's surface storage and the underground storage to zero at the end of the multi-year drought.

3. With these ASR injection and extraction capacities, simulate the system operation over the entire hydrologic record.

At the conclusion of the simulations of the Baseline, Proposed Project and each Alternative, the resulting daily diversions and Loch Lomond Reservoir fill and drawdown volumes are combined with the natural flows (prior to ASHCP bypass requirements) and any tributary inflows downstream of the diversions to calculate the daily anadromous-reach flows across the hydrologic

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[4] For the CMIP5 climate change projection, described in Appendix D-1, the worst drought occurs in the first 3 years of the hydrologic record. The 3 prior years were set at the average available flows over the record.

[5] Conjunctive use refers to a range of actions and projects that provide for the coordinated management of surface water and groundwater supplies to increase total supplies and enhance water supply reliability.

record in each stream. These results are provided as input to the fisheries effects modeling, described in Appendix D-3.

Key Assumptions

As discussed, the use of Confluence to support the development and evaluation of the Proposed Project and Alternatives presented in the Appendix D Overview and the Draft EIR builds upon the many years of application of Confluence to the City's system. Over those years, model capabilities were continuously updated and assumptions refined to better represent the actual operation of the system. Tables 1 through 5 lay out the key assumptions that underlie the model runs for the Baseline, Proposed Project, and the three Project Alternatives discussed in the Appendix D Overview and the body of the Draft EIR.

*Baseline Assumptions*

**Table 1. Key Modeling Assumptions for the Baseline**

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **DEMANDS** | **City Service Area** | 3,200 mgy |
| | **North Coast Agriculture** | 40 mgy |
| | | |
| **HYDROLOGY** | **Historical Hydrologic Record** | 1937-2015 |
| | **Climate Change Hydrologic Record** | 2020-2070 |
| | **Climate Model** | CMIP-5 MOD |
| | **Flow Rules** | interim bypass requirements effective in 2018 |
| | | |
| **DISPATCH OF SUPPLIES** | **Source Dispatch Order to Meet SCWD Demand** | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Beltz Wells<br>5. Surface water storage |
| | **North Coast Potential End Uses** | 1. Agricultural Demands<br>2. City Demands |
| | **Tait Potential End Uses** | City Demands |
| | **Felton Potential End Uses** | Surface storage at Loch Lomond Reservoir |
| | **Beltz Wells Potential End Uses** | City Demands |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| | **Loch Lomond Potential End Uses** | City Demands |
| | | |
| **DIVERSION CAPACITIES** | **Liddell** | 2.47 cfs |
| | **Laguna** | 6.27 cfs |
| | **Majors** | 2.09 cfs |
| | **Tait** | 11.52 cfs |
| | **Felton** | 12.40 cfs |
| | | |
| **WATER RIGHTS (maximum diversion rate)** | **North Coast** | No Limit when minimum flows are met |
| | **Felton** | Jan-May; Oct-Dec 20.0 cfs<br>Jun-Aug 0<br>Sep 7.8 cfs |
| | **Tait** | 12.2 cfs in all months |
| | | |
| **WATER TREATMENT PLANT CAPACITY (mgd)** | **Graham Hill WTP** | 16.5 mgd |
| | | |
| **OTHER KEY OPERATING CONSTRAINTS** | **North Coast** | Turbidity |
| | **Felton** | Turbidity, First Flush, Pump limitations, Reservoir elevations |
| | **Tait** | Turbidity |
| | | |
| **WELL EXTRACTION CAPACITIES (Native Groundwater)** | **Beltz Live Oak** | 0.8 mgd Apr - Nov in all water years |
| | **Beltz 12** | 0.3 mgd May - Aug in critically dry years |
| | **Tait Wells** | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr |
| | | |
| **LOCH LOMOND** | **Max/usable capacity** | 2,810 mg/1,740 mg |
| | **Allowable diversion months** | Sept-Jun |
| | **Daily Instream Release** | 1.00 cfs |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| | **Annual San Lorenzo Valley Entitlement** | 102.1 mg |
| | | |
| **AQUIFER STORAGE & RECOVERY** | **Storage Capacity** | N/A |
| | **Aquifer Losses** | N/A |
| | **Injection Capacity** | N/A |
| | **Extraction Capacity** | N/A |
| | **Injection Season** | N/A |
| | **Extraction Season** | N/A |
| | **Hydrologic condition restriction** | N/A |
| | | |
| **WATER TRANSFERS** | **Maximum monthly transfer** | N/A |
| | **Hydrologic condition restriction** | N/A |

Following are brief discussions of the Baseline assumptions laid out in Table 1.

- Demands. The assumptions represent the City's best estimates of the magnitudes of long-term unconstrained annual demands. "Unconstrained demands" are those that would be expected to be realized in the absence of voluntary or mandatory drought-related curtailments as described in the City's 2009 Water Shortage Contingency Plan [City of Santa Cruz 2009). These annual demands are allocated across calendar months based on customer demand patterns. These assumptions are identical to those used in recent SCWD system modeling, including the WSAC process, and the ASHCP.

- Hydrology. The 79-year historical and the 51-year climate change periods of record are again consistent with recent modeling efforts. The CMIP-5 MOD climate change projection is described above in Appendix D-1 and was used in the ASHCP process. The available flows in the Baseline are per the interim bypass requirements effective in 2018, described in Appendix D-3.

- Dispatch of Supplies. In each daily time step, the simulation dispatches the supply sources in this order to meet that day's demands. The North Coast sources are assigned the lowest shadow prices and are thus dispatched first. The available North Coast supply first serves North Coast agricultural demands, and the remaining available North Coast supply goes to the Graham Hill Water Treatment Plant (GHWTP) to serve SCWD demands. Available supplies from the Tait Diversion and the Tait wells are then dispatched to the GHWTP to serve SCWD demands. If there remains unserved demand, the available Beltz Well supplies are dispatched. The final source to be dispatched to the GHWTP to serve SCWD demands, which is only used if the other sources are unable to serve that day's demand, is the Loch Lomond Reservoir.

  For the Baseline, the places of use for all the supplies are consistent with existing water rights.

- Diversion and Treatment Constraints. In any daily time step of the simulation, actual diversions are constrained by many factors. The first of these is the physical diversion capacities, which are displayed in the Table 1. (The capacity shown for Felton is the assumed capacity of the Felton Booster Pump Station, which is somewhat less than the 13.7 cfs physical capacity of the diversion itself.) In addition, diversions may be constrained by water rights, the current magnitudes of which are also displayed in Table 1. Other operating constraints include:

    - Excess turbidity. If the water at the relevant diversion facility is determined to be too turbid on any day to either be treated at GHWTP or, in the case of Felton, to be stored in Loch Lomond Reservoir that diversion is shut off for that day. Confluence turbidity constraints are a function of the precipitation on the current day and recent past days. The constraints are designed to approximate the current treatment capabilities at GHWTP or the current turbidity limits for water placed into Loch Lomond Reservoir for storage.

    - Additional Felton Diversion constraints. Diversions from Felton are also limited by several other factors:

        - First flush. The City currently does not divert from Felton Diversion in the fall until after there have been sufficient flows to “flush” solids and other contaminants that have accumulated in the San Lorenzo River over the dry season. The specific modeled constraint is that diversions cannot begin until there have been two days of flow at the Big Trees gage that are at least 100 cfs.

        - Pumping limitations. The current configuration of the Felton Diversion pumps allows diversions only at several discrete levels up to and including the maximum 13.7 cfs. These discrete pumping levels are reflected in the model assumptions, and further constrain diversions at Felton Diversion.

        - Loch Lomond Reservoir elevations. The current transmission from Felton Diversion to Loch Lomond Reservoir is hydraulically constrained, so that the rate at which water can be moved decreases as the reservoir’s elevation increases. Of course, if Loch Lomond Reservoir is spilling, no water can be diverted from Felton Diversion to the reservoir.

- Water Treatment Plant. The GHWTP capacity is assumed to be 16.5 mgd.

- Well Extraction Capacities. Table 1 displays the assumed well extraction capacities for the Beltz wells as well as the Tait wells.

- Loch Lomond Reservoir. The assumed maximum storage capacity of the reservoir is 2,810 mg. Of this, 70 mg is assumed to be inaccessible for drawdown. In addition, 1,000 mg is assumed to be reserved to insure against a possible future drought, which is longer and/or more severe than what has been experienced in the past. This leaves 1,740 mg usable storage volume. This usable storage capacity is filled and drawn down as described above. Other key Loch Lomond Reservoir operating constraints are also displayed in Table 1.

It is worth repeating that all assumptions have been refined over the years to ensure that the model simulates as closely as possible the manner in which City currently operates its water system.

*Proposed Project Assumptions*

**Table 2. Key Modeling Assumptions for the Proposed Project**

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **DEMANDS** | **City Service Area** | 3,200 mgy |
| | **North Coast Agriculture** | 40 mgy |
| | | |
| **HYDROLOGY** | **Historical Hydrologic Record** | 1937-2015 |
| | **Climate Change Hydrologic Record** | 2020-2070 |
| | **Climate Model** | CMIP-5 MOD |
| | **Flow Rules** | Agreed Flows |
| | | |
| **DISPATCH OF SUPPLIES** | **Source Dispatch Order to Meet City Demand** | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Felton<br>5. Beltz Wells<br>6. Surface water and groundwater storage operated in parallel |
| | **North Coast End Uses** | 1. Agricultural Demands<br>2. City Demands<br>3. GW Storage<br>4. Transfers |
| | **Tait Potential End Uses** | 1. City Demands<br>2. GW Storage<br>3. Transfers |
| | **Felton Potential End Uses** | 1. City Demands<br>2. Surface storage<br>3. GW Storage<br>4. Transfers |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| | **Beltz Wells End Uses** | City Demands |
| | **Loch Lomond & ASR End Uses** | City Demands[6] |
| | | |
| **DIVERSION CAPACITIES** | **Liddell** | 2.47 cfs |
| | **Laguna** | 6.27 cfs |
| | **Majors** | 2.09 cfs |
| | **Tait** | 27.85 cfs |
| | **Felton** | 13.70 cfs |
| | | |
| **WATER RIGHTS (maximum diversion rate)** | **North Coast** | No Limit when Agreed Flows are met |
| | **Felton & Tait** | Shared water right:<br>Jan-May; Oct-Dec 32.2 cfs<br>Jun-Aug 12.2 cfs<br>Sep 20.0 cfs |
| | | |
| **WATER TREATMENT PLANT CAPACITY (mgd)** | **Graham Hill WTP** | 18 mgd |
| | | |
| **OTHER KEY OPERATING CONSTRAINTS** | **North Coast** | Turbidity |
| | **Felton** | Turbidity, First Flush |
| | **Tait** | Turbidity |
| | | |
| **WELL EXTRACTION CAPACITIES (Native Groundwater)** | **Beltz Live Oak** | 0.8 mgd Apr - Nov in all water years |
| | **Beltz 12** | 0.3 mgd May - Aug in critically dry years |
| | **Tait Wells** | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr |

[6] The Proposed Project includes the expansion of the Newell Creek/Loch Lomond water-right license's (License 9847) place of use to include neighboring agencies and the full boundaries of local groundwater basins. Transfers under that license into that expanded area are likely to be rare and are addressed qualitatively in the Draft EIR.

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| | | |
| **LOCH LOMOND** | **Max/usable capacity** | 2,810 mg/1,740 mg |
| | **Allowable diversion months** | Sept-Jun |
| | **Daily Instream Release** | 1.00 cfs |
| | **Annual San Lorenzo Valley Entitlement** | 102.1 mg |
| | | |
| **AQUIFER STORAGE & RECOVERY** | **Storage Capacity** | 3,000 mg |
| | **Aquifer Losses** | 20% |
| | **Injection Capacity** | Hist 4.5 mgd; Clim Chg 5.5 mgd |
| | **Extraction Capacity** | Hist 8.0 mgd; Clim Chg 7.0 mgd |
| | **Injection Season** | Nov-Apr |
| | **Extraction Season** | May-Oct |
| | **Hydrologic condition restriction** | No injection in Hydrologic Condition-5 months |
| | | |
| **WATER TRANSFERS** | **Maximum monthly transfer** | Neighbor agency groundwater demands |
| | **Hydrologic condition restriction** | No transfer in Hydrologic Condition-4 & Hydrologic Condition-5 months |

Following are brief discussions of the key differences between the modeling assumptions for the Proposed Project, as laid out in Table 2 and those for the Baseline.

- Hydrology. The available flows for diversions in the Proposed Project are determined by the Agreed Flow rules.

- Dispatch of Supplies. The final step of the dispatch includes the joint drawdown of the surface water from Loch Lomond Reservoir storage and ASR groundwater storage. In addition, the water rights changes included in the Proposed Project, discussed below, expand the potential destinations for the supplies from particular sources. Table 2 shows the order of destinations to which each source is dispatched.

- Diversion Constraints. The Tait Diversion capacity is assumed to be upgraded to match the upgraded treatment plant capacity. The current Felton Booster Pump Station constraints are assumed to be removed, so the capacity shown for the Felton Diversion is the physical capacity of the diversion itself. Other operating constraints that differ from the Baseline include:

    - Excess turbidity. Because of the assumed improvements at GHWTP, the number of days of turbidity shutoffs are assumed to be halved for the Felton and Tait Diversions.

- Additional Felton Diversion constraints. Assumed improvements to the Felton pumps eliminate the discrete pumping limitations of the Baseline. Likewise, improvements to the Felton Booster Pump Station and transmission to Loch Lomond Reservoir are assumed to remove the hydraulic constraints so the capacity to move water to the reservoir no longer depends on the reservoir elevation.

- Water Rights. The Proposed Project shares the current water rights at Felton and Tait, and the places of use for those diversions are expanded so that either can divert water to the SCWD service area, to ASR injection, and to neighboring agencies. Likewise, the Proposed Project expands the allowed places of use for the North Coast diversions.

- Water Treatment Plant. The GHWTP is assumed to be upgraded to a capacity of 18 mgd. The upgrades are also assumed to enable more turbid water to be treated.

- Well Extraction Capacities. The Beltz and Tait well capacities to extract native groundwater are supplemented by the assumed ASR well extraction capacities discussed below.

- ASR. Based on preliminary groundwater modeling, the groundwater storage capacity is assumed to be 3 billion gallons. A 20% loss factor is also assumed, so that for each 100 gallons injected, only 80 gallons are available for extraction. The volumes in groundwater storage are assumed to drawn down jointly with Loch Lomond Reservoir. Table 2 shows the assumed injection and extraction capacities. Injections are constrained in the modeling to the months of November-April; extractions are modeled to occur in May-October. Finally, no injection is permitted in months for which the Big Trees flow falls in the lowest quintile (Hydrologic Condition 5). See Appendix D-3 for a description of the Hydrologic Conditions.)

- Water Transfers. Transfers only occur when available streamflows on any day exceed the volumes that can be delivered to all other points of use. Transfers are limited by the combined estimated groundwater demands of Soquel Creek Water District, Scotts Valley Water District, and San Lorenzo Valley Water District. Central Water District demands are assumed to be within these other districts demands because Central is relatively small. Transfers cannot occur in months for which the Big Trees flow falls in the lowest two quintiles (Hydrologic Conditions 4 and 5).

*Assumptions for Project Alternatives*

The three Project Alternatives are described in detail in the Appendix D Overview and in the body of the Draft EIR. Their key differences in modeling assumptions are summarized as follows:

- Alternative 1. Flows available for diversion are determined by the Agreed Flows, consistent with the Proposed Project. This alternative also includes all infrastructure changes that have independent utility (see Appendix D Overview). Water rights are unchanged from current water rights, consistent with the Baseline.

- Alternative 2. Assumptions regarding available flows, infrastructure improvements, and shared water rights are consistent with the Proposed Project. However, there is no place of use expansion focused on ensuring regional water supply reliability in neighboring districts and groundwater basins. Alternative 2 would not include water transfers to neighboring agencies and ASR would be possible only within the City's service area.

- Alternative 3. Assumptions regarding available flows, infrastructure improvements, water rights, and water transfers are consistent with the Proposed Project. However, there is no ASR infrastructure for groundwater storage and extraction.

**Table 3. Key Modeling Assumptions for Alternative 1**

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **DEMANDS** | **City Service Area** | 3,200 mgy |
| | **North Coast Agriculture** | 40 mgy |
| | | |
| **HYDROLOGY** | **Historical Hydrologic Record** | 1937-2015 |
| | **Flow Rules** | Agreed Flows |
| | | |
| **DISPATCH OF SUPPLIES** | **Source Dispatch Order to Meet City Demand** | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Beltz Wells<br>5. Surface water storage |
| | **North Coast End Uses** | 1. Agricultural Demands<br>2. City Demands |
| | **Tait Potential End Uses** | City Demands |
| | **Felton Potential End Uses** | Surface storage |
| | **Beltz Wells End Uses** | City Demands |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| | **Loch Lomond End Uses** | City Demands |
| | | |
| **DIVERSION CAPACITIES** | **Liddell** | 2.47 cfs |
| | **Laguna** | 6.27 cfs |
| | **Majors** | 2.09 cfs |
| | **Tait** | 11.52 cfs |
| | **Felton** | 13.70 cfs |
| | | |
| **WATER RIGHTS (maximum diversion rate)** | **North Coast** | No limit when Agreed Flows are met |
| | **Felton** | Jan-May; Oct-Dec 20.0 cfs<br>Jun-Aug 0<br>Sep 7.8 cfs |
| | **Tait** | 12.2 cfs in all months |
| | | |
| **WATER TREATMENT PLANT CAPACITY (mgd)** | **Graham Hill WTP** | 18 mgd |
| | | |
| **OTHER KEY OPERATING CONSTRAINTS** | **North Coast** | Turbidity |
| | **Felton** | Turbidity, First Flush |
| | **Tait** | Turbidity |
| | | |
| **WELL EXTRACTION CAPACITIES (Native Groundwater)** | **Beltz Live Oak** | 0.8 mgd Apr - Nov in all water years |
| | **Beltz 12** | 0.3 mgd May - Aug in critically dry years |
| | **Tait Wells** | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr |
| | | |
| **LOCH LOMOND** | **Max/usable capacity** | 2,810 mg/1,740 mg |
| | **Allowable diversion months** | Sept-Jun |
| | **Daily Instream Release** | 1.00 cfs |
| | **Annual San Lorenzo Valley Entitlement** | 102.1 mg |
| | | |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **AQUIFER STORAGE & RECOVERY** | **Storage Capacity** | N/A |
| | **Aquifer Losses** | N/A |
| | **Injection Capacity** | N/A |
| | **Extraction Capacity** | N/A |
| | **Injection Season** | N/A |
| | **Extraction Season** | N/A |
| | **Hydrologic condition restriction** | N/A |
| | | |
| **WATER TRANSFERS** | **Maximum monthly transfer** | N/A |
| | **Hydrologic condition restriction** | N/A |

**Table 4. Key Modeling Assumptions for Alternative 2**

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **DEMANDS** | **City Service Area** | 3,200 mgy |
| | **North Coast Agriculture** | 40 mgy |
| | | |
| **HYDROLOGY** | **Historical Hydrologic Record** | 1937-2015 |
| | **Flow Rules** | Agreed Flows |
| | | |
| **DISPATCH OF SUPPLIES IN MODELING** | **Source Dispatch Order to Meet City Demand** | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Felton<br>5. Beltz Wells<br>6. Surface water and groundwater storage operated in parallel |
| | **North Coast End Uses** | 1. Agricultural Demands<br>2. City Demands<br>3. GW Storage |
| | **Tait Potential End Uses** | 1. City Demands<br>2. GW Storage |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| | **Felton Potential End Uses** | 1. City Demands<br>2. Surface storage<br>3. GW Storage |
| | **Beltz Wells Potential Destination** | City Demands |
| | **Loch Lomond & ASR End Uses** | City Demands |
| | | |
| **DIVERSION CAPACITIES** | **Liddell** | 2.47 cfs |
| | **Laguna** | 6.27 cfs |
| | **Majors** | 2.09 cfs |
| | **Tait Street** | 27.85 cfs |
| | **Felton** | 13.70 cfs |
| | | |
| **WATER RIGHTS (maximum diversion rate)** | **North Coast** | No limit when Agreed Flows are met |
| | **Felton & Tait** | Shared water right:<br>Jan-May; Oct-Dec 32.2 cfs<br>Jun-Aug 12.2 cfs<br>Sep 20.0 cfs |
| | | |
| **WATER TREATMENT PLANT CAPACITY (mgd)** | **Graham Hill WTP** | 18 mgd |
| | | |
| **OTHER KEY OPERATING CONSTRAINTS** | **North Coast** | Turbidity |
| | **Felton** | Turbidity, First Flush |
| | **Tait** | Turbidity |
| | | |
| **WELL EXTRACTION CAPACITIES (Native Groundwater)** | **Beltz Live Oak** | 0.8 mgd Apr - Nov in all water years |
| | **Beltz 12** | 0.3 mgd May - Aug in critically dry years |
| | **Tait Wells** | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr |
| | | |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **LOCH LOMOND** | **Max/usable capacity** | 2,810 mg/1,740 mg |
| | **Allowable diversion months** | Sept-Jun |
| | **Daily Instream Release** | 1.00 cfs |
| | **Annual San Lorenzo Valley Entitlement** | 102.1 mg |
| | | |
| **AQUIFER STORAGE & RECOVERY** | **Storage Capacity** | 2,100 mg |
| | **Aquifer Losses** | 20% |
| | **Injection Capacity** | 2.10 mgd |
| | **Extraction Capacity** | 2.17 mgd |
| | **Injection Season** | Nov-Apr |
| | **Extraction Season** | May-Oct |
| | **Hydrologic condition restriction** | No injection in Hydrologic Condition-5 months |
| | | |
| **WATER TRANSFERS** | **Maximum monthly transfer** | N/A |
| | **Hydrologic condition restriction** | N/A |

**Table 5. Key Modeling Assumptions for Alternative 3**

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **DEMANDS** | **City Service Area** | 3,200 mgy |
| | **North Coast Agriculture** | 40 mgy |
| | | |
| **HYDROLOGY** | **Historical Hydrologic Record** | 1937-2015 |
| | **Flow Rules** | Agreed Flows |
| | | |
| **DISPATCH OF SUPPLIES** | **Source Dispatch Order to Meet City Demand** | 1. North Coast<br>2. Tait Diversion<br>3. Tait Wells<br>4. Felton<br>5. Beltz Wells<br>6. Surface water |
| | **North Coast End Uses** | 1. Agricultural Demands<br>2. City Demands |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| | | 3. Transfers |
| | **Tait Potential End Uses** | 1. City Demands<br>2. Transfers |
| | **Felton Potential End Uses** | 1. City Demands<br>2. Surface storage<br>3. Transfers |
| | **Beltz Wells End Uses** | City Demands |
| | **Loch Lomond & Aquifer Potential End Uses** | City Demands |
| | | |
| **DIVERSION CAPACITIES** | **Liddell** | 2.47 cfs |
| | **Laguna** | 6.27 cfs |
| | **Majors** | 2.09 cfs |
| | **Tait** | 27.85 cfs |
| | **Felton** | 13.70 cfs |
| | | |
| **WATER RIGHTS (maximum diversion rate)** | **North Coast** | No limit when Agreed Flows are met |
| | **Felton & Tait** | Shared water right:<br>Jan-May; Oct-Dec 32.2 cfs<br>Jun-Aug 12.2 cfs<br>Sep 20.0 cfs |
| | | |
| **WATER TREATMENT PLANT CAPACITY (mgd)** | **Graham Hill WTP** | 18 mgd |
| | | |
| **OTHER KEY OPERATING CONSTRAINTS** | **North Coast** | Turbidity |
| | **Felton** | Turbidity, First Flush |
| | **Tait** | Turbidity |
| | | |

| CATEGORY | COMPONENT | ASSUMPTION |
|---|---|---|
| **WELL EXTRACTION CAPACITIES (Native Groundwater)** | **Beltz Live Oak** | 0.8 mgd Apr - Nov in all water years |
| | **Beltz 12** | 0.3 mgd May - Aug in critically dry years |
| | **Tait Wells** | 1.28 mgd May-Dec; 0.78 mgd Jan-Apr |
| | | |
| **LOCH LOMOND** | **Max/usable capacity** | 2,810 mg/1,740 mg |
| | **Allowable diversion months** | Sept-Jun |
| | **Daily Instream Release** | 1.00 cfs |
| | **Annual San Lorenzo Valley Entitlement** | 102.1 mg |
| | | |
| **AQUIFER STORAGE & RECOVERY** | **Storage Capacity** | N/A |
| | **Aquifer Losses** | N/A |
| | **Injection Capacity** | N/A |
| | **Extraction Capacity** | N/A |
| | **Injection Season** | N/A |
| | **Extraction Season** | N/A |
| | **Hydrologic condition restriction** | N/A |
| | | |
| **WATER TRANSFERS** | **Maximum monthly transfer** | Neighbor agency groundwater demands |
| | **Hydrologic condition restriction** | No transfer in Hydrologic Condition-4 &Hydrologic Condition-5 months |

<u>Key Model Outputs</u>

As discussed above, there is a large array of potential model outputs. Following are charts that illustrate a subset of those outputs that provide key comparisons among the Baseline, Proposed Project, and Alternatives 1 through 3. Results will first be shown for historical flows and then for climate change.

*Historical Flows*

For historical flows, the ASR injection and extraction capacities needed to achieve the water supply reliability goal (zero worst-drought peak-season shortage) for the Proposed Project are 4.5 mgd and 8.0 mgd, respectively. With these capacities, Figures 2 and 3 compare the total annual diversions from the San Lorenzo River.

**Figure 2. Annual Felton Diversions: Historical Flows**

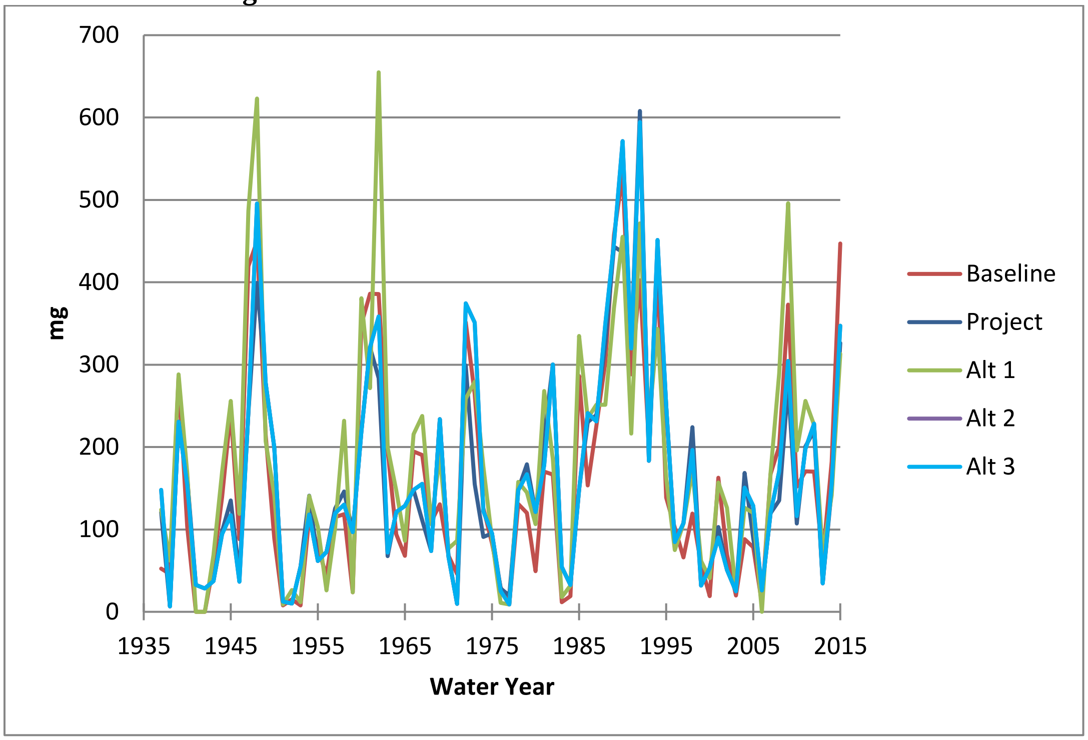


**Figure 3. Annual Tait Diversions: Historical Flows**

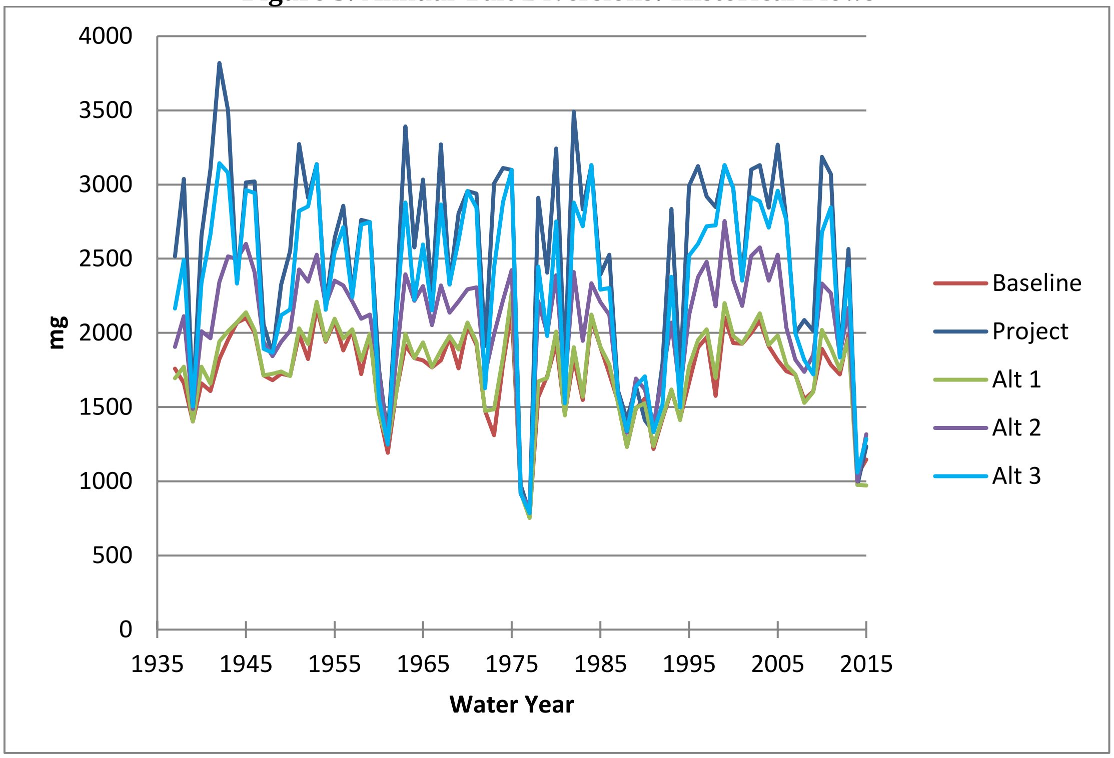



Figure 4 compares North Coast annual diversions. The slight variations are due to the small differences between the interim bypass flows effective in 2018 and the Agreed Flows.

**Figure 4. Annual Diversions from the North Coast: Historical Flows**

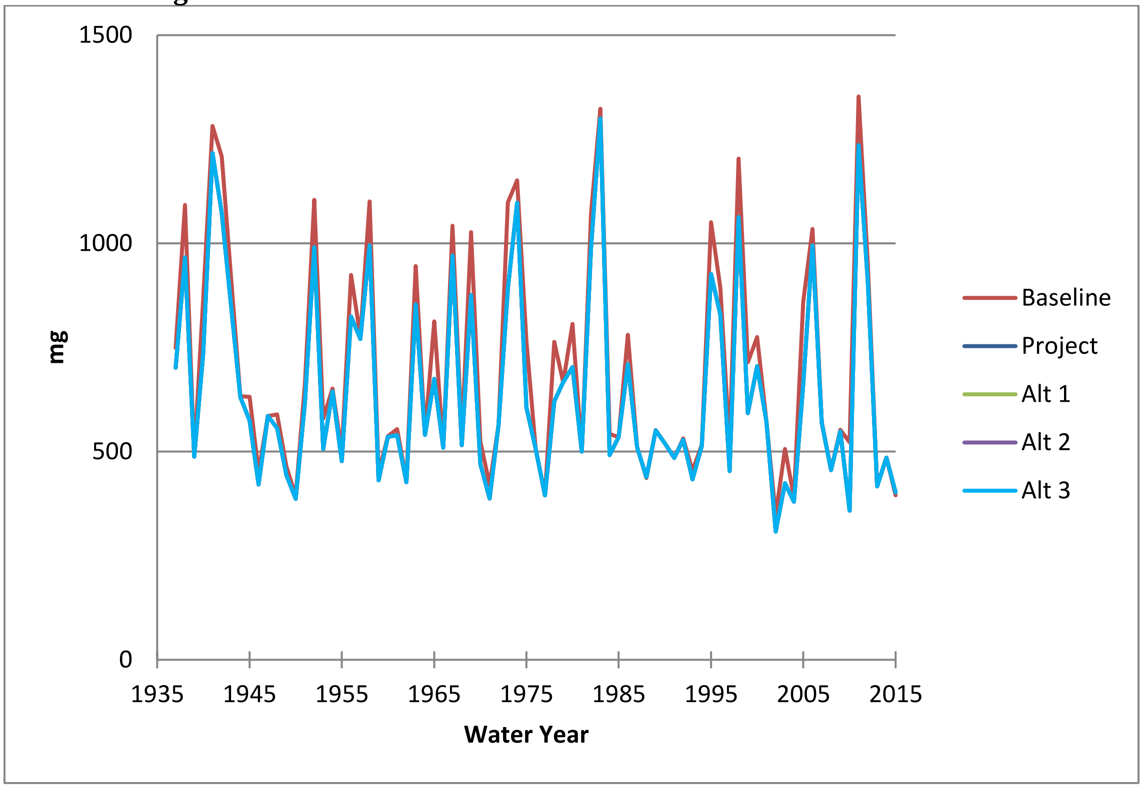



Figure 5 compares the annual ASR injection and extraction volumes for the Proposed Project and Alternative 2. (Recall that the extraction volumes reflect the assumed 20% aquifer losses.)

**Figure 5. Annual ASR Injection and Extraction Volumes: Historical Flows**

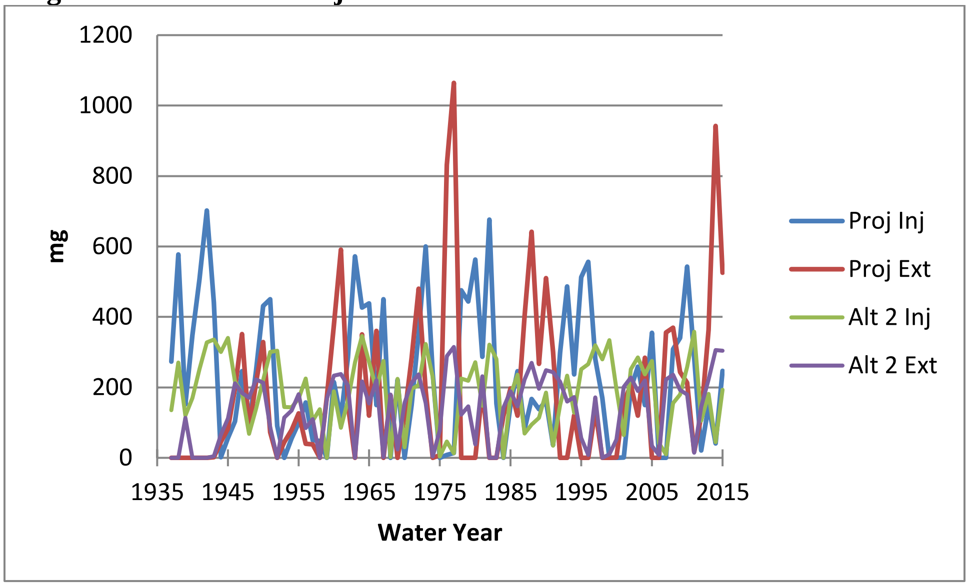



Figure 6 compares the resulting peak-season shortages across the hydrologic record. The large shortage during the worst (1976-77) drought in the Baseline is apparent. Consistent with the water supply reliability goal, that shortage is eliminated by the Proposed Project's ASR infrastructure. The Proposed Project also eliminates lesser shortages in other dry periods.

**Figure 6. Peak-Season Shortages: Historical Flows**

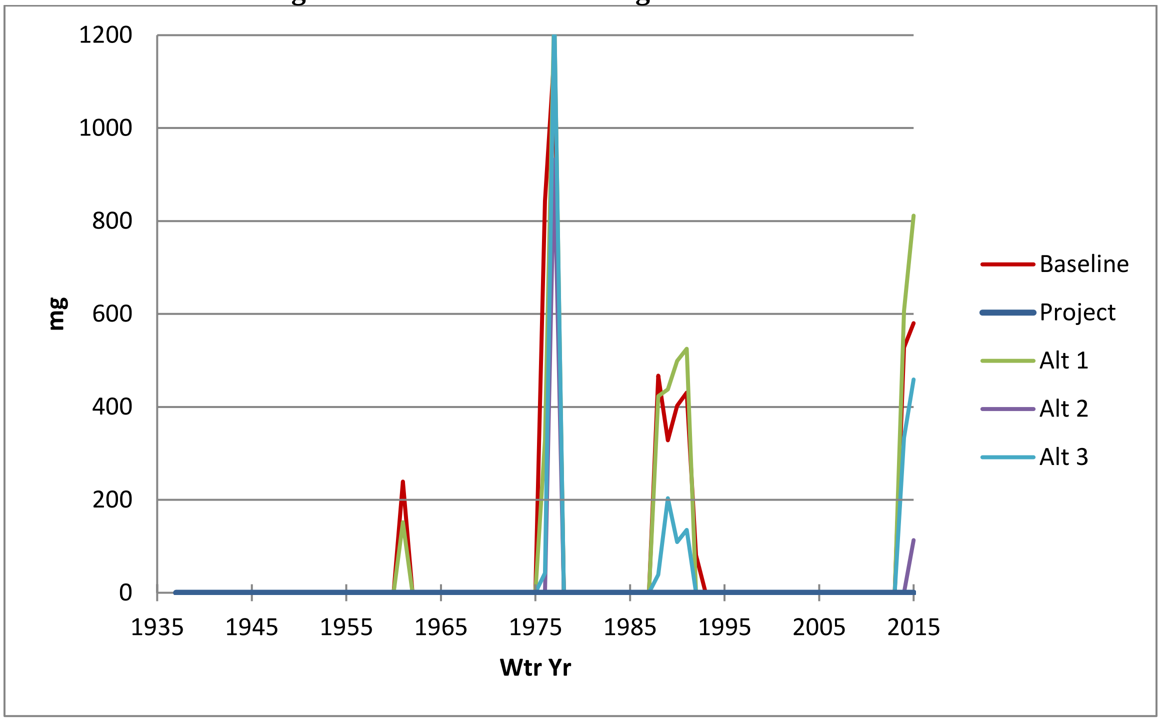
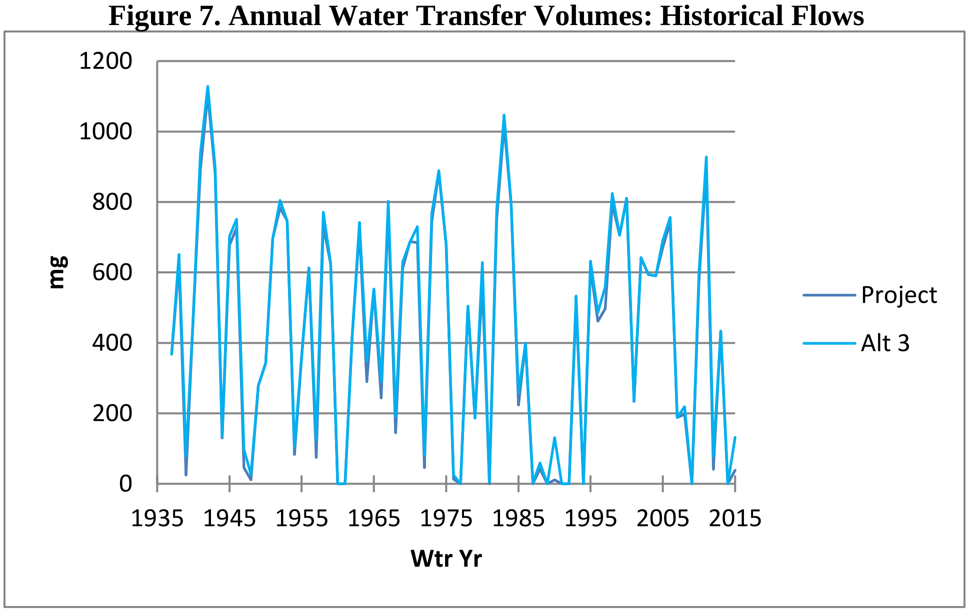



Figure 7 compares the annual volumes transferred to neighboring agencies.

**Figure 7. Annual Water Transfer Volumes: Historical Flows**




Figures 8 and 9 show exceedence curves for end-of-April (beginning of dry season) usable storage volumes, including Loch Lomond Reservoir and ASR.

**Figure 8. End-of-April Usable Loch Lomond Reservoir Storage: Historical Flows**

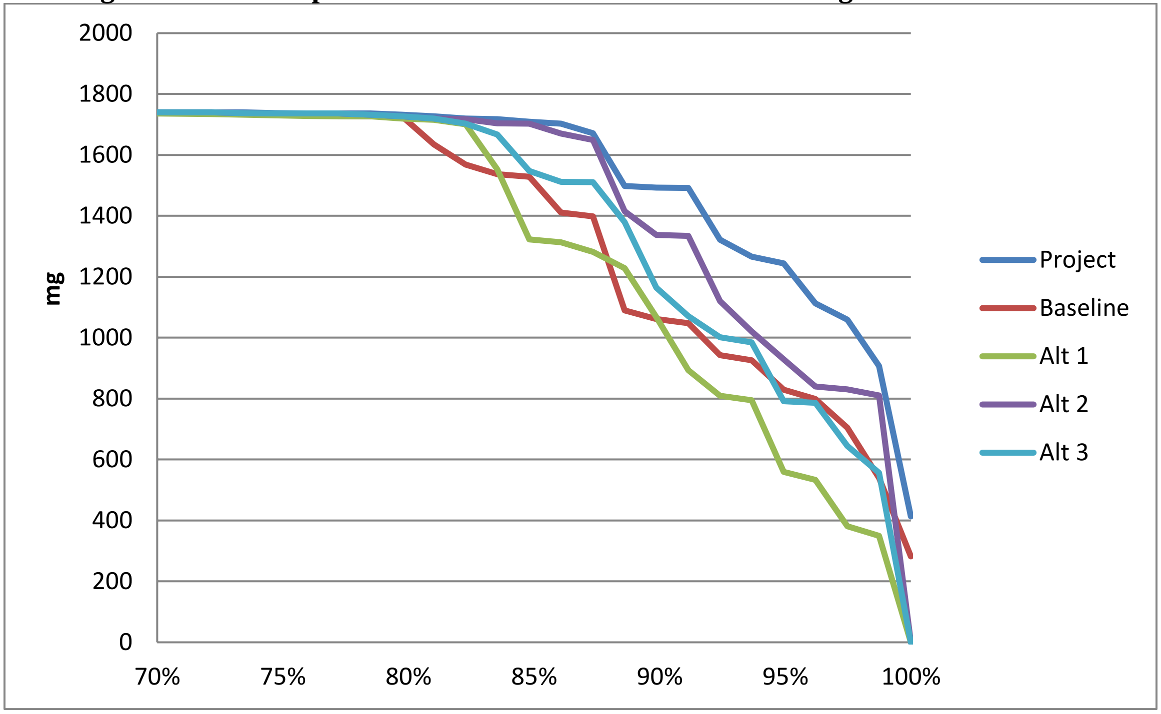
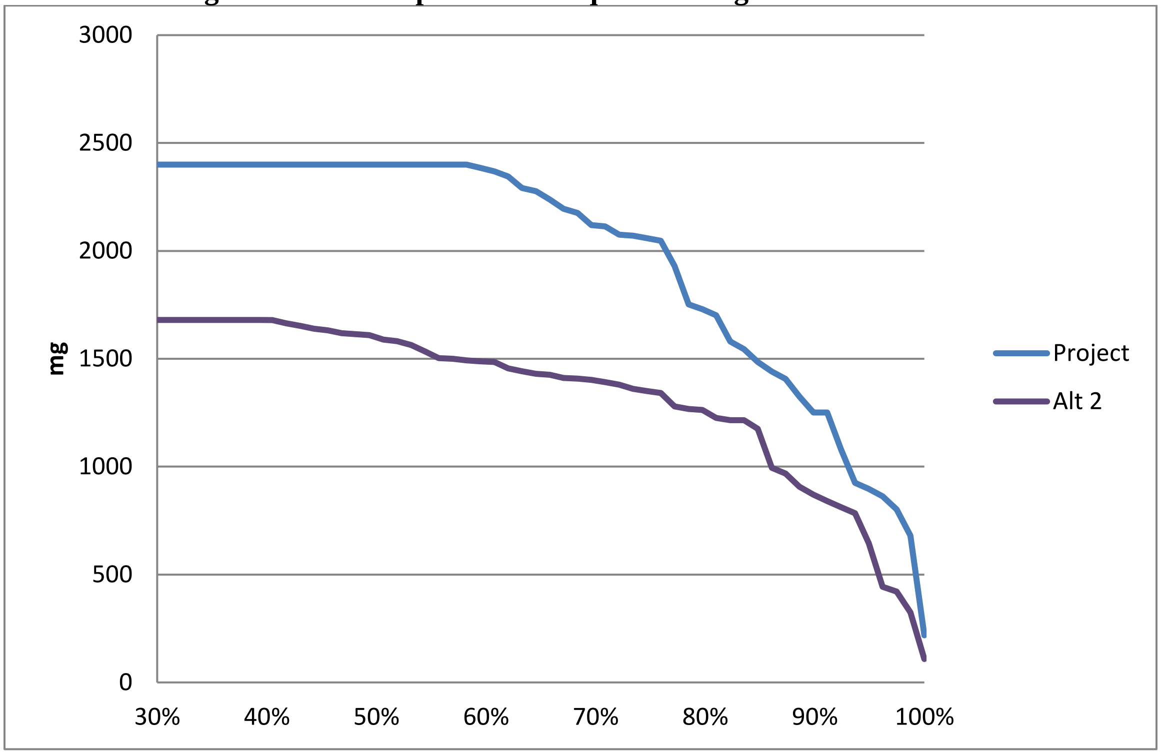


**Figure 9. End-of-April Usable Aquifer Storage: Historical Flows**




*Climate Change*

For CMIP-5 climate change flows, the ASR injection and extraction capacities needed to achieve the water supply reliability goal (zero worst-drought peak-season shortage) for our Proposed Project are 6.0 mgd and 7.0 mgd respectively. The following charts compare the Baseline and Proposed Project.

**Figure 10. Annual Diversions from San Lorenzo River: Climate Change**

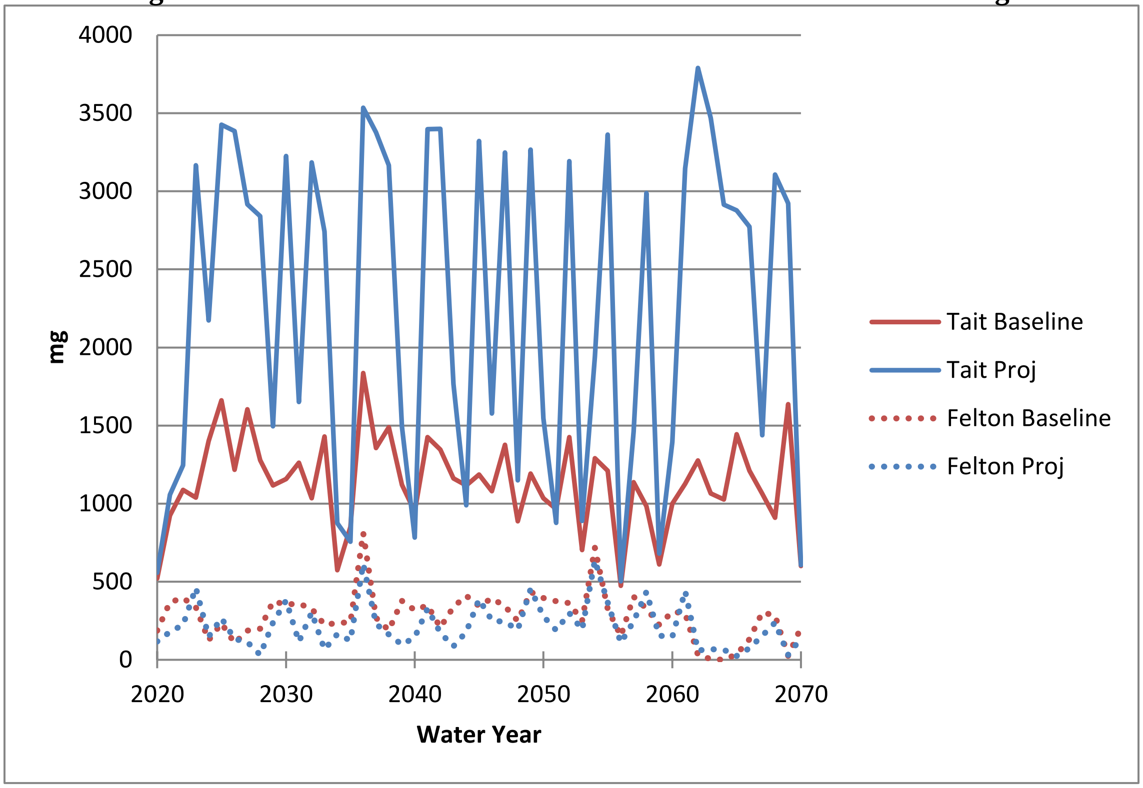


**Figure 11. Annual Diversions from the North Coast: Climate Change**

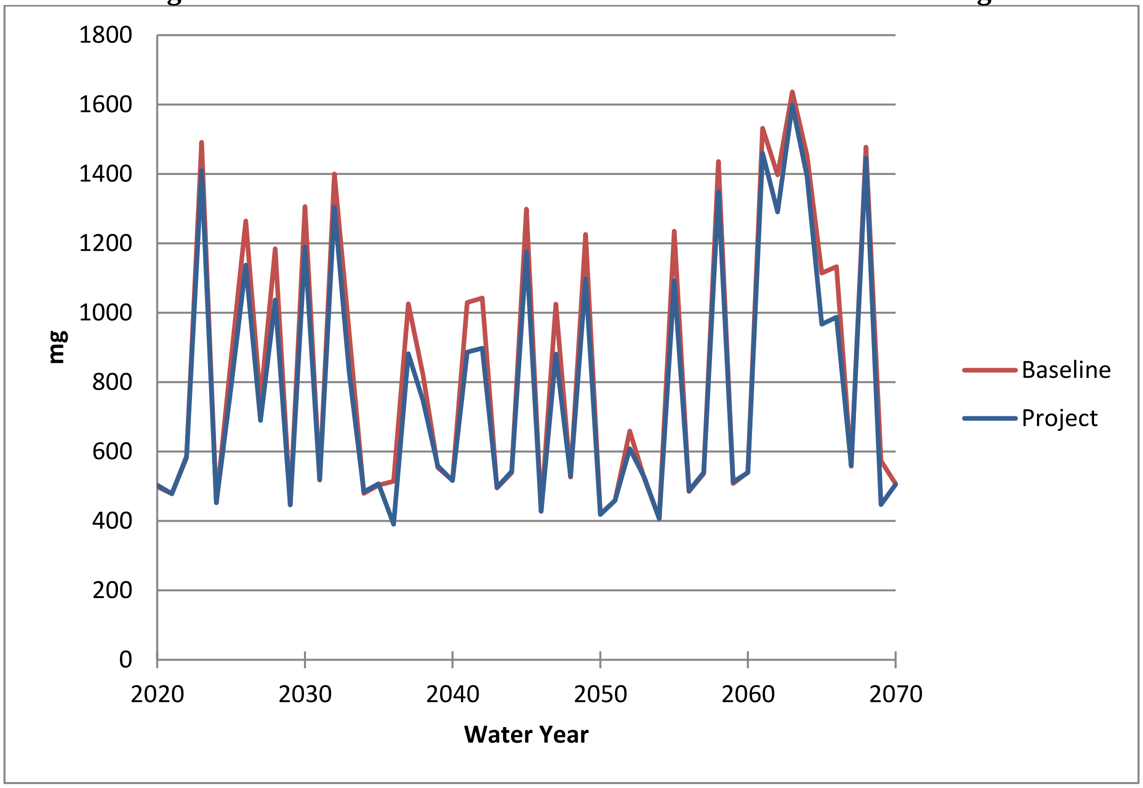



**Figure 12. Annual Project ASR Injection and Extraction Volumes: Climate Change**

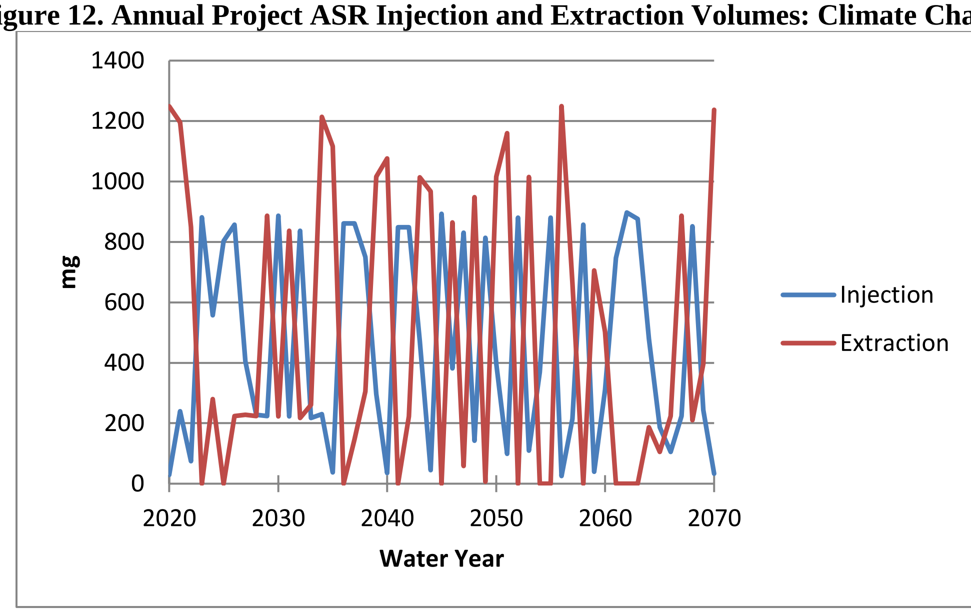


**Figure 13. Peak-Season Shortages: Climate Change**

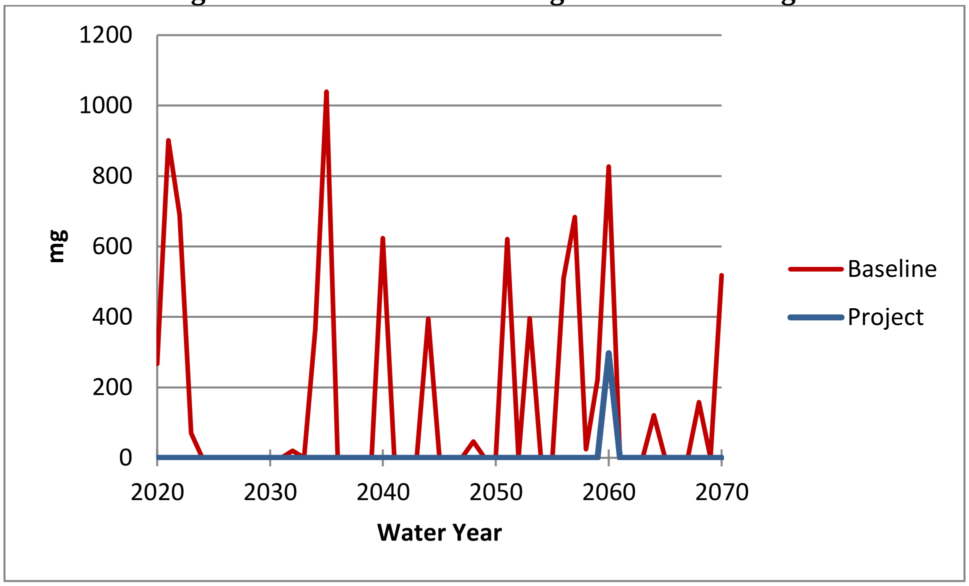



**Figure 14. Annual Project Water Transfer Volumes: Climate Change**

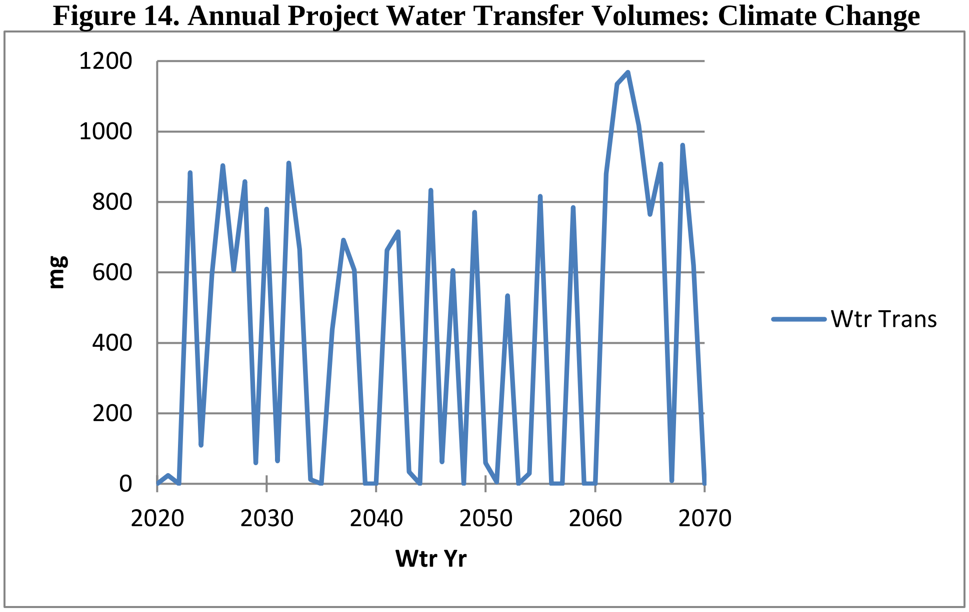


**Figure 15. End-of-April Usable Loch Lomond Storage: Climate Change**

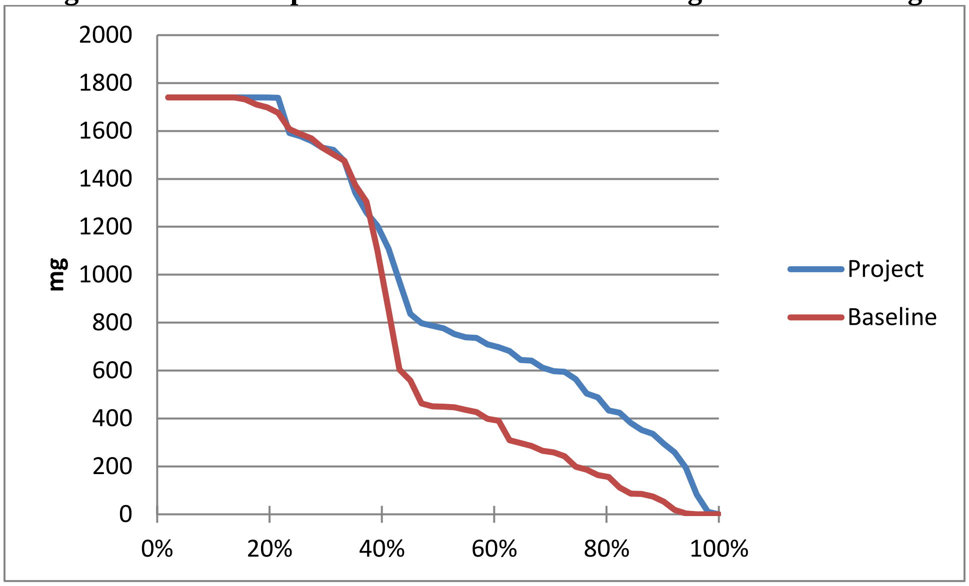
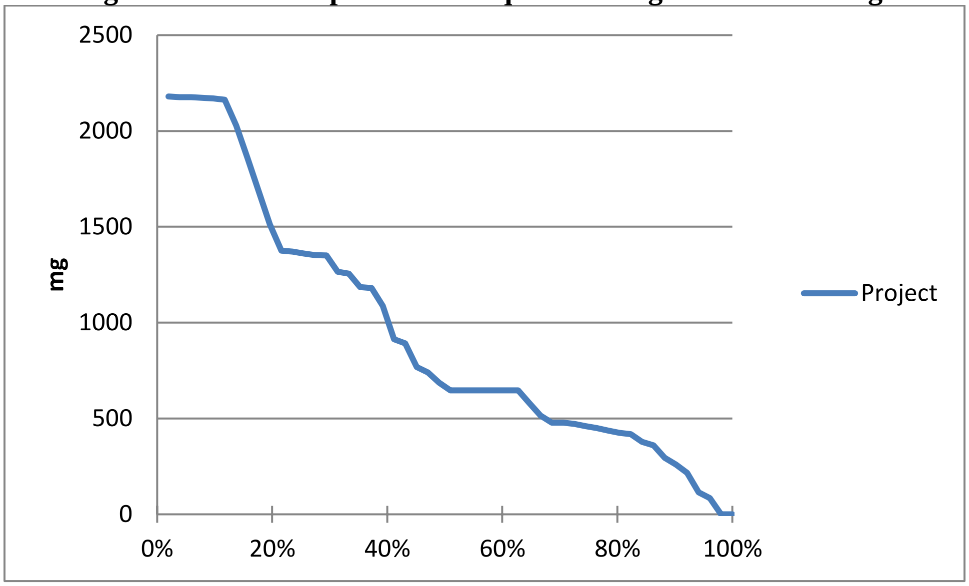


**Figure 16. End-of-April Usable Aquifer Storage: Climate Change**



# ATTACHMENT 1

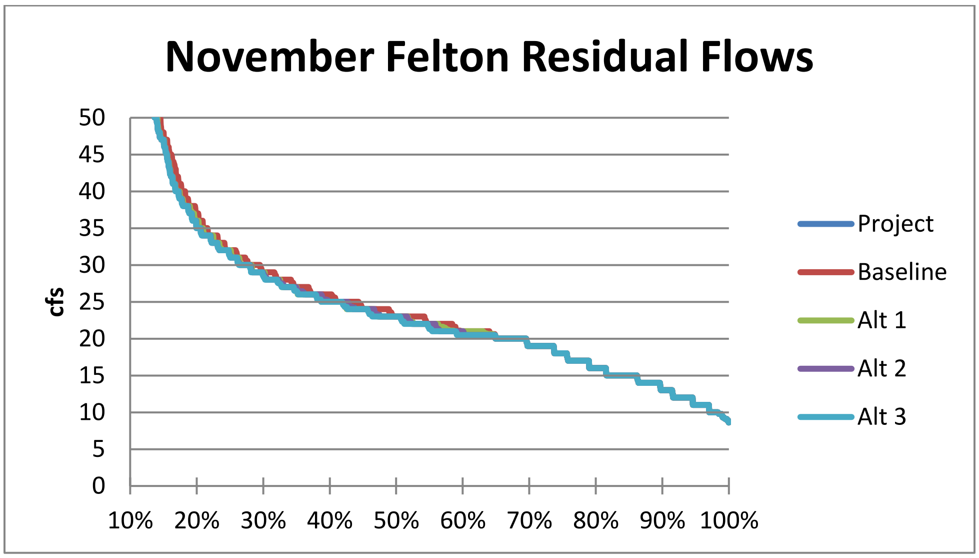
# RESIDUAL FLOW EXCEEDENCE CURVES

This attachment contains the modeled exceedence curves and associated data for the monthly residual flows in the anadromous reaches below each of City's six diversions. The daily residual flows are defined as follows:

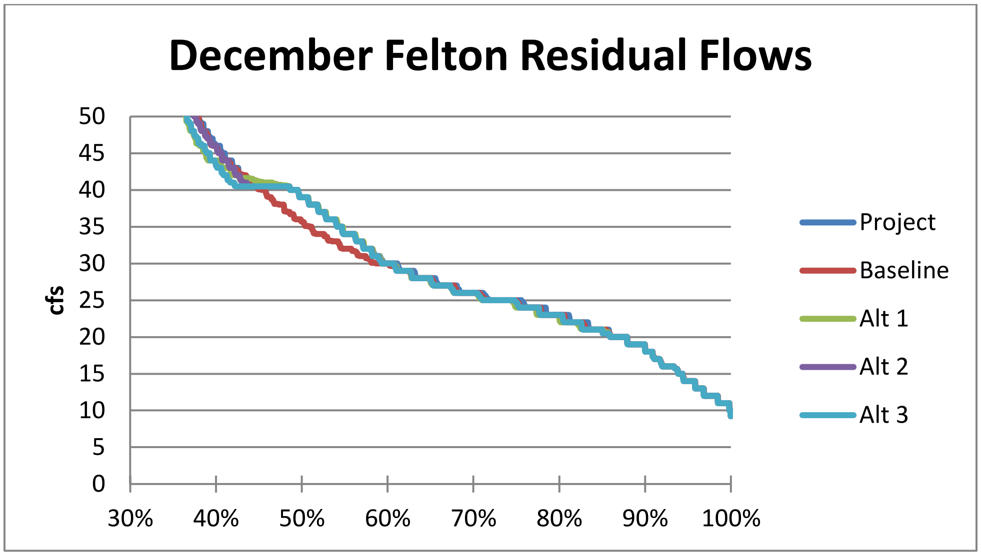
*Natural streamflow - Diversion volume + Tributary inflows below point of diversion*

The charts all show the exceedence probabilities for flows up to 50 cfs.

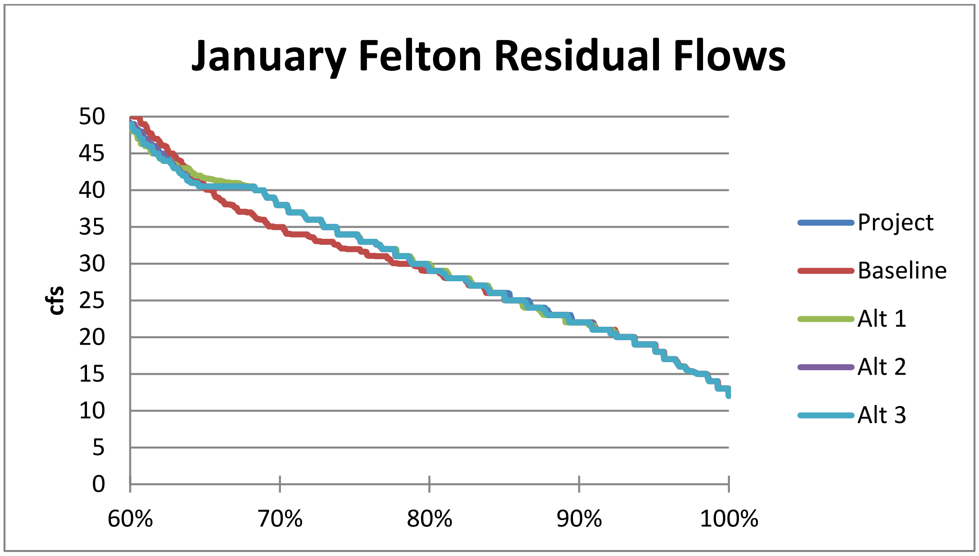
## FELTON DIVERSION



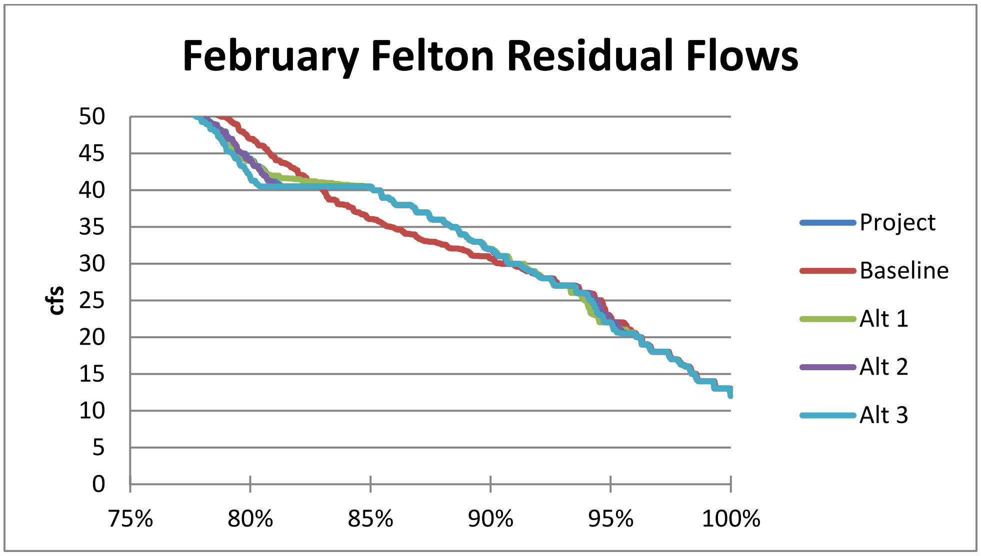

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 72 | 73 | 72 | 72 | 71 |
| **20%** | 36 | 37 | 36 | 35 | 35 |
| **30%** | 29 | 29 | 29 | 29 | 29 |
| **40%** | 25 | 26 | 25 | 25 | 25 |
| **50%** | 23 | 23 | 23 | 23 | 23 |
| **60%** | 21 | 21 | 21 | 21 | 21 |
| **70%** | 19 | 19 | 19 | 19 | 19 |
| **80%** | 16 | 16 | 16 | 16 | 16 |
| **90%** | 13 | 13 | 13 | 13 | 13 |
| **100%** | 9 | 9 | 9 | 9 | 9 |



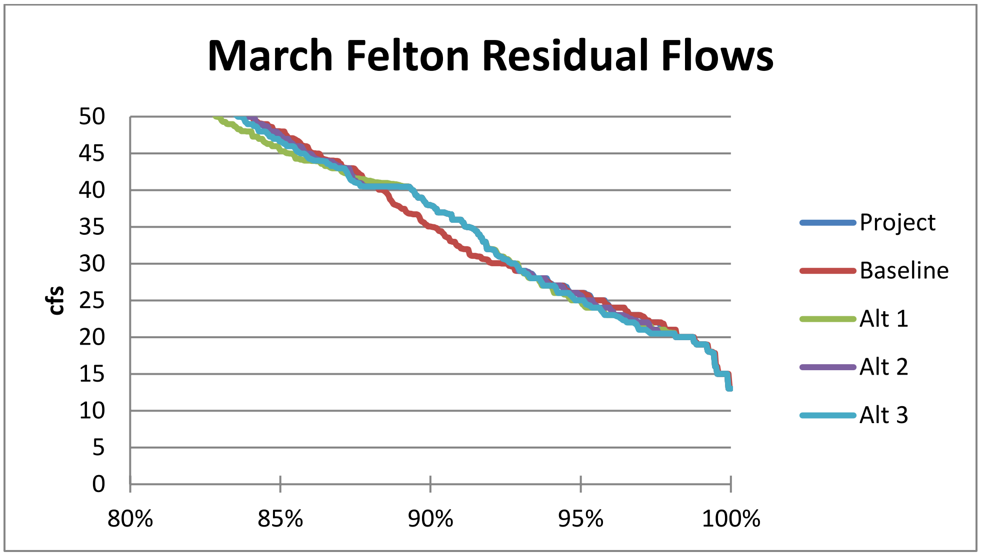

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 358 | 358 | 358 | 358 | 358 |
| **20%** | 133 | 139 | 132 | 133 | 132 |
| **30%** | 71 | 73 | 71 | 71 | 71 |
| **40%** | 46 | 46 | 44 | 46 | 43 |
| **50%** | 39 | 36 | 39 | 39 | 39 |
| **60%** | 30 | 30 | 30 | 30 | 30 |
| **70%** | 26 | 26 | 26 | 26 | 26 |
| **80%** | 23 | 23 | 23 | 23 | 23 |
| **90%** | 18 | 18 | 18 | 18 | 18 |
| **100%** | 9 | 9 | 9 | 9 | 9 |



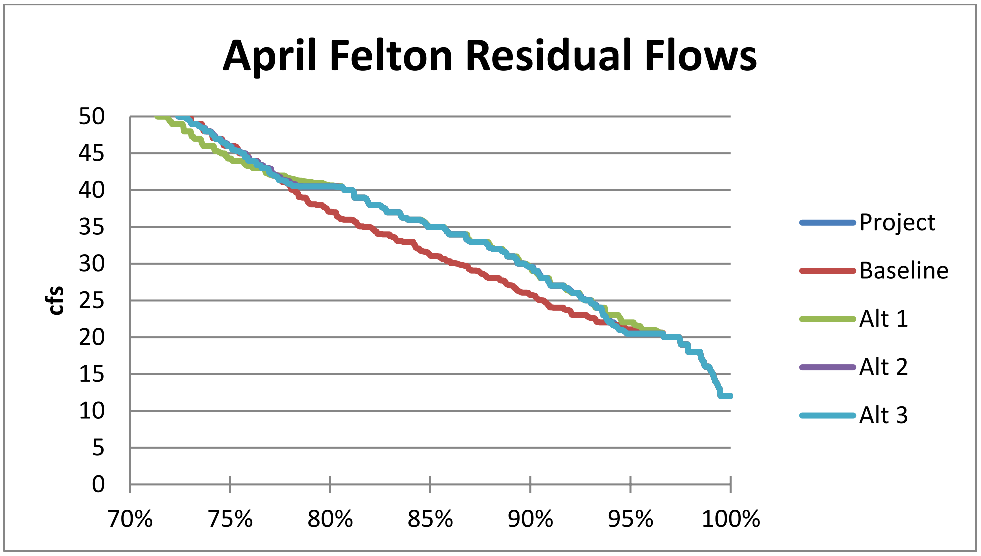

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 708 | 708 | 708 | 708 | 708 |
| **20%** | 337 | 337 | 337 | 337 | 337 |
| **30%** | 202 | 203 | 202 | 202 | 202 |
| **40%** | 123 | 123 | 123 | 123 | 122 |
| **50%** | 75 | 76 | 76 | 75 | 75 |
| **60%** | 49 | 51 | 48 | 49 | 49 |
| **70%** | 38 | 35 | 38 | 38 | 38 |
| **80%** | 30 | 29 | 30 | 29 | 29 |
| **90%** | 22 | 22 | 22 | 22 | 22 |
| **100%** | 12 | 12 | 12 | 12 | 12 |



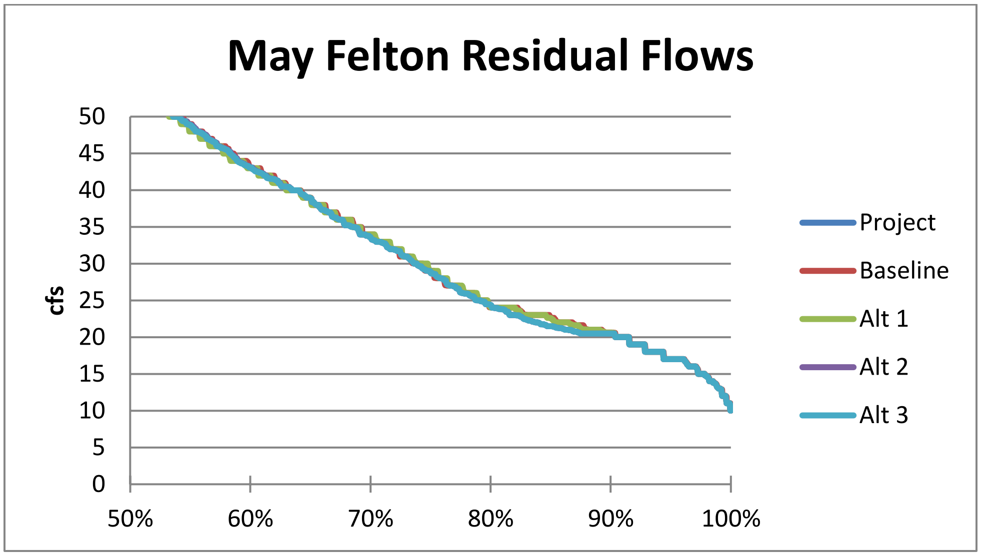

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 872 | 872 | 872 | 872 | 872 |
| **20%** | 486 | 493 | 486 | 486 | 486 |
| **30%** | 303 | 304 | 303 | 303 | 303 |
| **40%** | 204 | 205 | 203 | 204 | 204 |
| **50%** | 146 | 146 | 145 | 146 | 146 |
| **60%** | 106 | 106 | 105 | 106 | 105 |
| **70%** | 76 | 76 | 74 | 76 | 75 |
| **80%** | 44 | 47 | 44 | 44 | 42 |
| **90%** | 32 | 31 | 32 | 32 | 32 |
| **100%** | 12 | 12 | 12 | 12 | 12 |



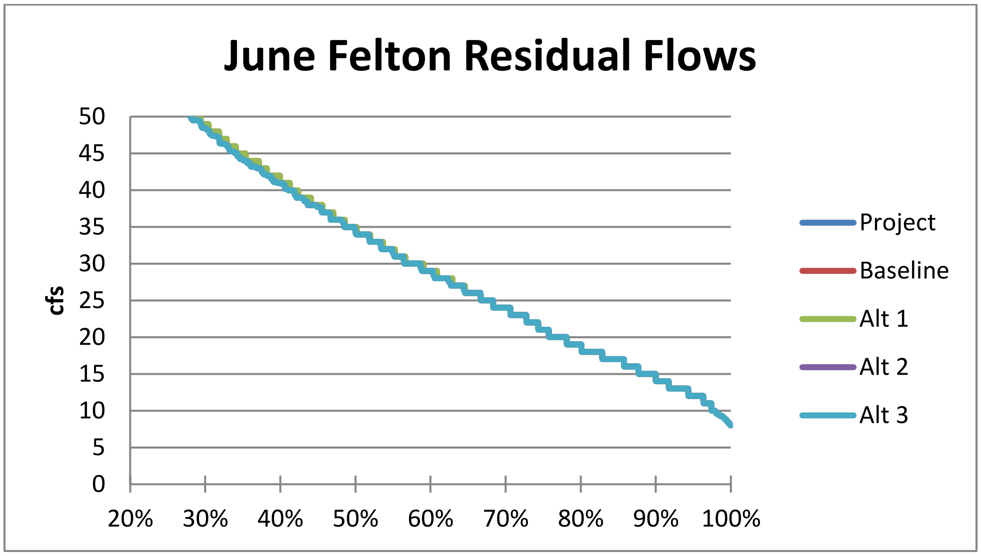

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 606 | 606 | 606 | 606 | 606 |
| **20%** | 397 | 396 | 396 | 396 | 396 |
| **30%** | 276 | 277 | 276 | 275 | 274 |
| **40%** | 196 | 195 | 195 | 196 | 194 |
| **50%** | 144 | 144 | 143 | 144 | 142 |
| **60%** | 105 | 105 | 104 | 105 | 104 |
| **70%** | 79 | 79 | 78 | 79 | 78 |
| **80%** | 58 | 58 | 56 | 58 | 58 |
| **90%** | 38 | 35 | 38 | 38 | 38 |
| **100%** | 13 | 13 | 13 | 13 | 13 |



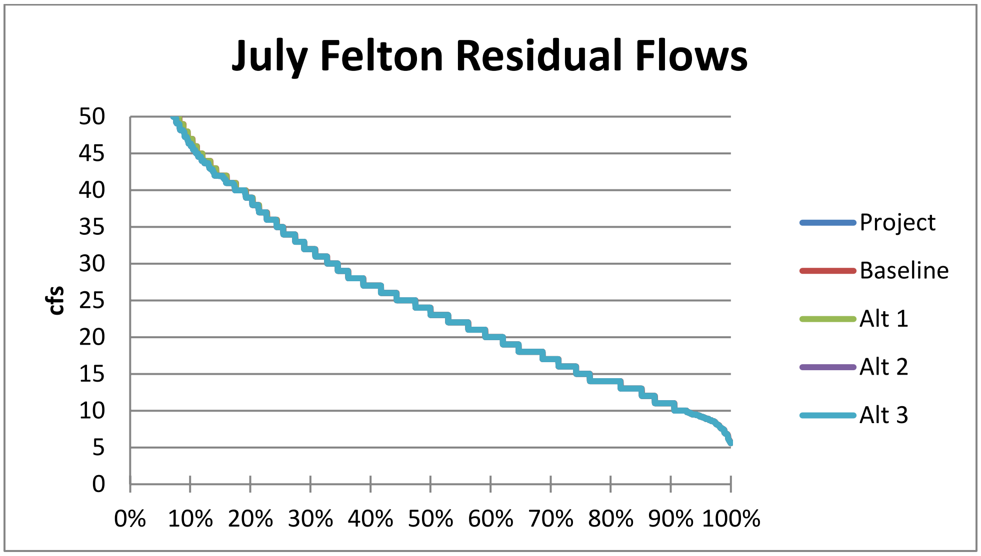

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 345 | 345 | 345 | 345 | 345 |
| **20%** | 214 | 215 | 215 | 214 | 214 |
| **30%** | 157 | 158 | 158 | 157 | 157 |
| **40%** | 114 | 114 | 114 | 114 | 114 |
| **50%** | 87 | 87 | 87 | 87 | 87 |
| **60%** | 68 | 68 | 67 | 68 | 68 |
| **70%** | 54 | 54 | 53 | 54 | 54 |
| **80%** | 41 | 37 | 41 | 41 | 41 |
| **90%** | 30 | 26 | 30 | 30 | 30 |
| **100%** | 12 | 12 | 12 | 12 | 12 |



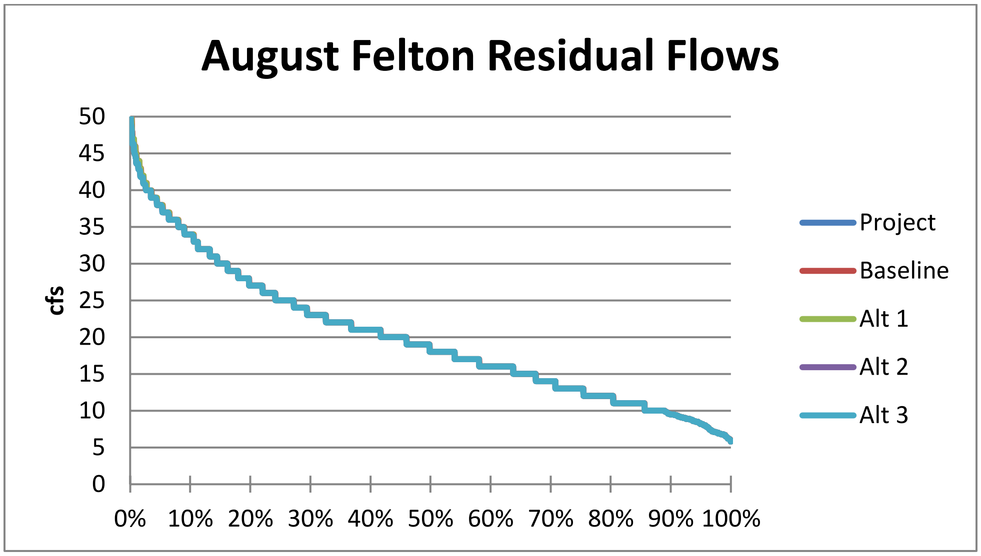

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 140 | 140 | 140 | 140 | 140 |
| **20%** | 99 | 99 | 99 | 99 | 99 |
| **30%** | 80 | 80 | 80 | 80 | 80 |
| **40%** | 68 | 67 | 67 | 68 | 67 |
| **50%** | 54 | 54 | 54 | 54 | 54 |
| **60%** | 43 | 43 | 43 | 43 | 43 |
| **70%** | 34 | 34 | 34 | 34 | 34 |
| **80%** | 24 | 24 | 24 | 24 | 24 |
| **90%** | 21 | 21 | 21 | 21 | 21 |
| **100%** | 10 | 10 | 10 | 10 | 10 |



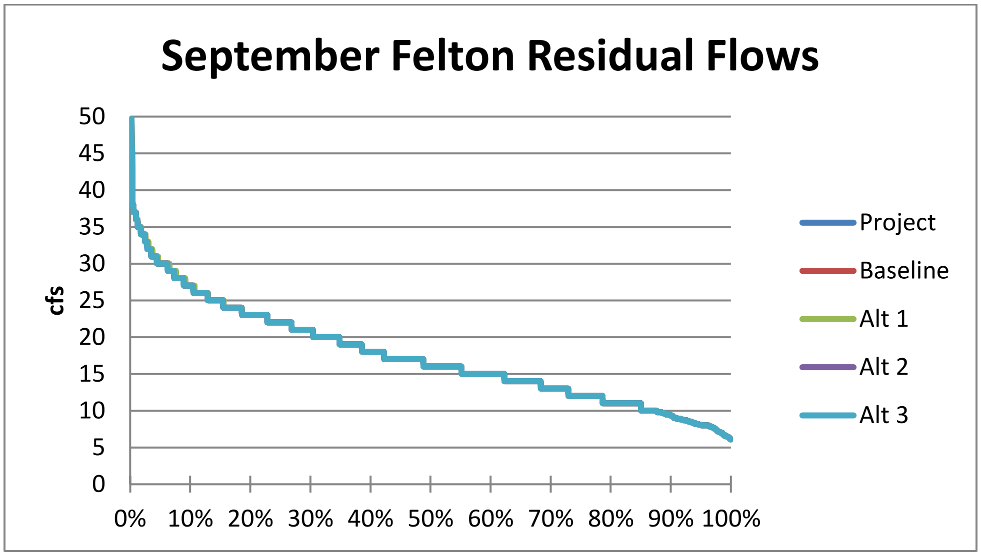

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 75 | 75 | 75 | 75 | 75 |
| **20%** | 59 | 59 | 59 | 59 | 59 |
| **30%** | 48 | 49 | 49 | 48 | 48 |
| **40%** | 41 | 41 | 41 | 41 | 41 |
| **50%** | 35 | 35 | 35 | 35 | 35 |
| **60%** | 29 | 29 | 29 | 29 | 29 |
| **70%** | 24 | 24 | 24 | 24 | 24 |
| **80%** | 19 | 19 | 19 | 19 | 19 |
| **90%** | 14 | 14 | 14 | 14 | 14 |
| **100%** | 8 | 8 | 8 | 8 | 8 |



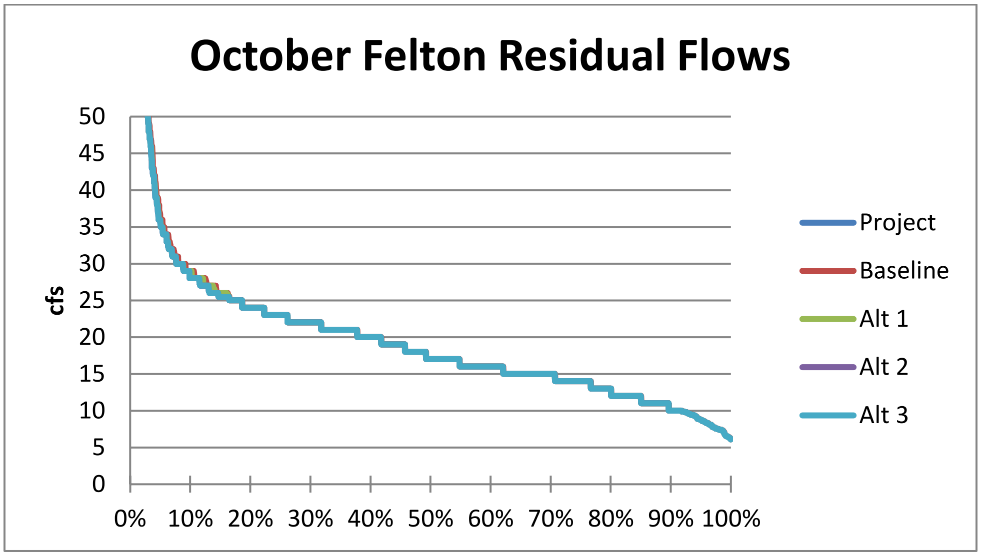

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 46 | 47 | 47 | 46 | 46 |
| **20%** | 39 | 39 | 39 | 39 | 39 |
| **30%** | 32 | 32 | 32 | 32 | 32 |
| **40%** | 27 | 27 | 27 | 27 | 27 |
| **50%** | 23 | 23 | 23 | 23 | 23 |
| **60%** | 20 | 20 | 20 | 20 | 20 |
| **70%** | 17 | 17 | 17 | 17 | 17 |
| **80%** | 14 | 14 | 14 | 14 | 14 |
| **90%** | 11 | 11 | 11 | 11 | 11 |
| **100%** | 6 | 6 | 6 | 6 | 6 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 34 | 34 | 34 | 34 | 34 |
| **20%** | 27 | 27 | 27 | 27 | 27 |
| **30%** | 23 | 23 | 23 | 23 | 23 |
| **40%** | 21 | 21 | 21 | 21 | 21 |
| **50%** | 18 | 18 | 18 | 18 | 18 |
| **60%** | 16 | 16 | 16 | 16 | 16 |
| **70%** | 14 | 14 | 14 | 14 | 14 |
| **80%** | 12 | 12 | 12 | 12 | 12 |
| **90%** | 10 | 10 | 10 | 10 | 10 |
| **100%** | 6 | 6 | 6 | 6 | 6 |

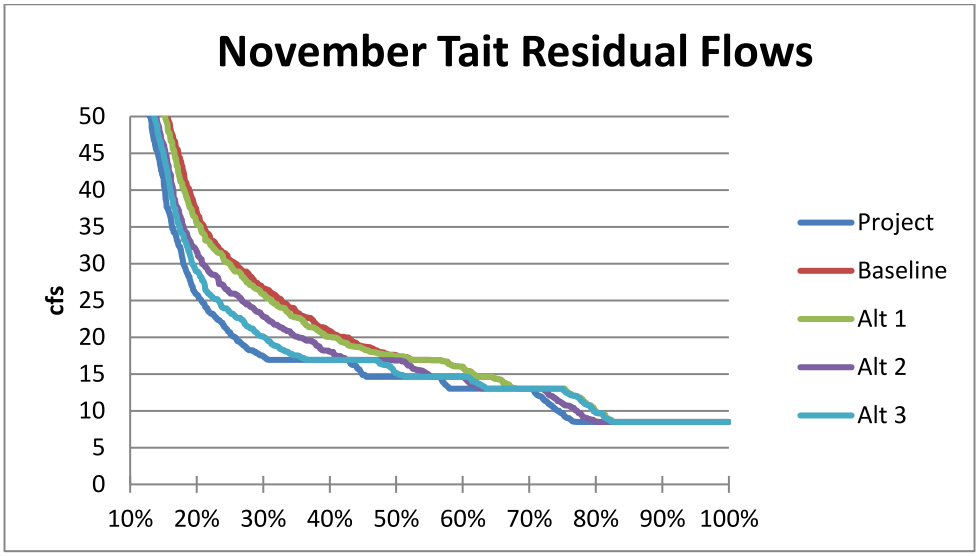



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 27 | 27 | 27 | 27 | 27 |
| **20%** | 23 | 23 | 23 | 23 | 23 |
| **30%** | 21 | 21 | 21 | 21 | 21 |
| **40%** | 18 | 18 | 18 | 18 | 18 |
| **50%** | 16 | 16 | 16 | 16 | 16 |
| **60%** | 15 | 15 | 15 | 15 | 15 |
| **70%** | 13 | 13 | 13 | 13 | 13 |
| **80%** | 11 | 11 | 11 | 11 | 11 |
| **90%** | 9 | 9 | 9 | 9 | 9 |
| **100%** | 6 | 6 | 6 | 6 | 6 |

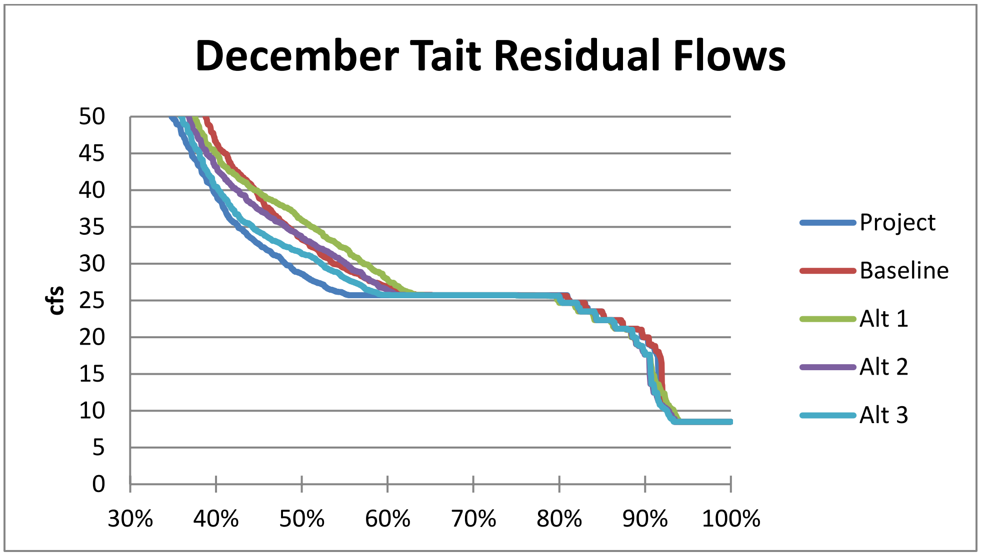



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 28 | 29 | 29 | 28 | 28 |
| **20%** | 24 | 24 | 24 | 24 | 24 |
| **30%** | 22 | 22 | 22 | 22 | 22 |
| **40%** | 20 | 20 | 20 | 20 | 20 |
| **50%** | 17 | 17 | 17 | 17 | 17 |
| **60%** | 16 | 16 | 16 | 16 | 16 |
| **70%** | 15 | 15 | 15 | 15 | 15 |
| **80%** | 13 | 13 | 13 | 13 | 13 |
| **90%** | 10 | 10 | 10 | 10 | 10 |
| **100%** | 6 | 6 | 6 | 6 | 6 |

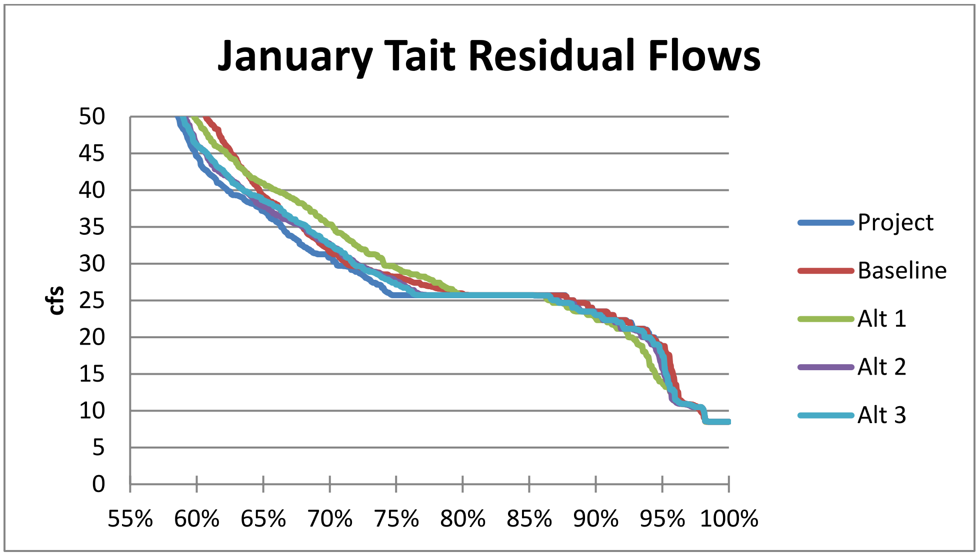
## TAIT DIVERSION



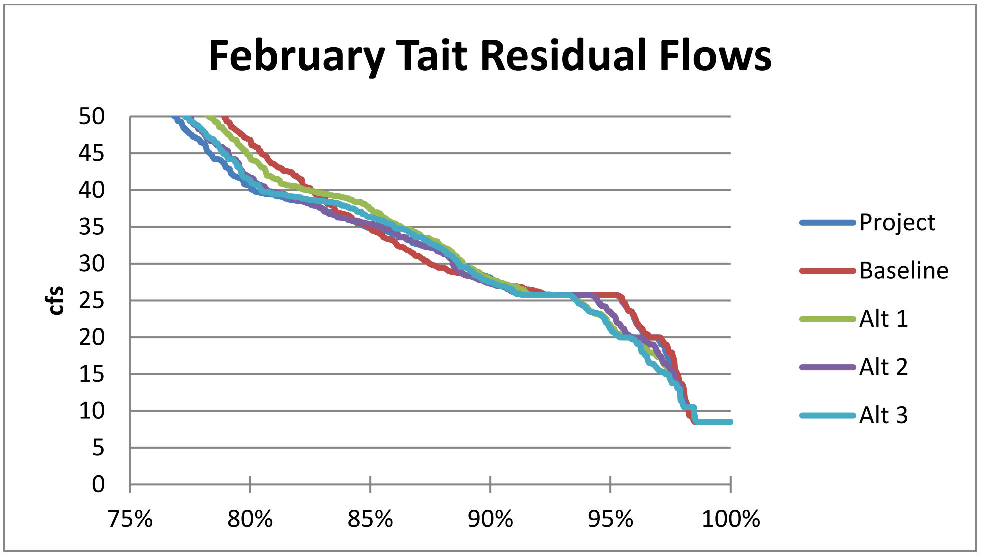

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 73 | 84 | 83 | 77 | 74 |
| **20%** | 26 | 37 | 36 | 32 | 29 |
| **30%** | 17 | 27 | 26 | 23 | 20 |
| **40%** | 17 | 21 | 20 | 18 | 17 |
| **50%** | 15 | 18 | 17 | 17 | 15 |
| **60%** | 13 | 16 | 16 | 15 | 15 |
| **70%** | 13 | 13 | 13 | 13 | 13 |
| **80%** | 9 | 10 | 10 | 9 | 10 |
| **90%** | 9 | 9 | 9 | 9 | 9 |
| **100%** | 8 | 8 | 8 | 8 | 8 |



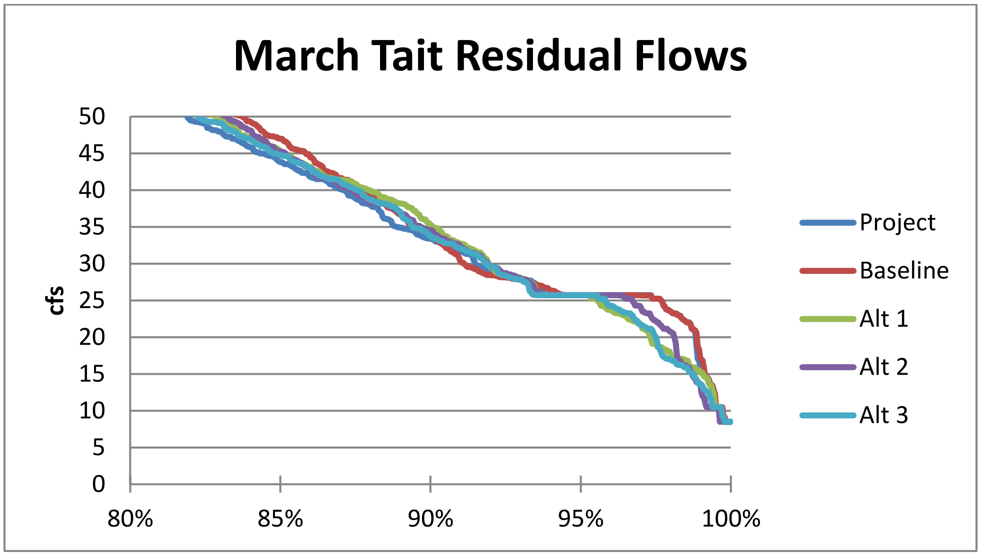

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 394 | 399 | 398 | 394 | 394 |
| **20%** | 145 | 157 | 153 | 149 | 147 |
| **30%** | 70 | 80 | 77 | 74 | 71 |
| **40%** | 39 | 46 | 45 | 43 | 40 |
| **50%** | 29 | 33 | 36 | 34 | 31 |
| **60%** | 26 | 27 | 28 | 26 | 26 |
| **70%** | 26 | 26 | 26 | 26 | 26 |
| **80%** | 26 | 26 | 25 | 26 | 25 |
| **90%** | 20 | 20 | 18 | 18 | 18 |
| **100%** | 8 | 8 | 8 | 8 | 8 |



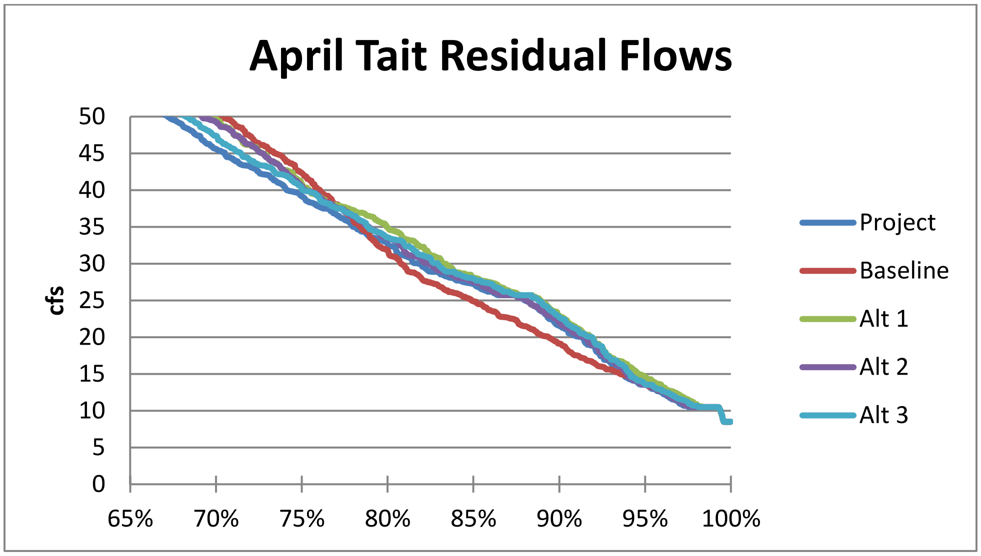

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 791 | 796 | 796 | 795 | 792 |
| **20%** | 377 | 388 | 388 | 384 | 383 |
| **30%** | 211 | 222 | 221 | 217 | 215 |
| **40%** | 125 | 132 | 132 | 128 | 126 |
| **50%** | 76 | 82 | 80 | 78 | 76 |
| **60%** | 45 | 52 | 49 | 46 | 46 |
| **70%** | 31 | 32 | 35 | 33 | 33 |
| **80%** | 26 | 26 | 26 | 26 | 26 |
| **90%** | 23 | 23 | 23 | 23 | 23 |
| **100%** | 9 | 8 | 8 | 8 | 8 |



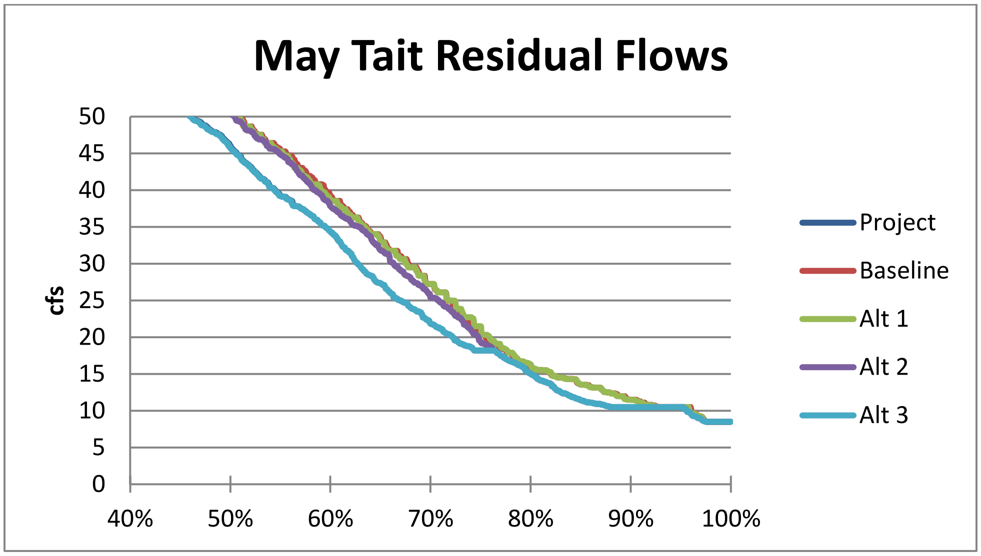

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 977 | 985 | 985 | 979 | 979 |
| **20%** | 540 | 550 | 542 | 541 | 541 |
| **30%** | 324 | 330 | 331 | 327 | 326 |
| **40%** | 212 | 219 | 219 | 217 | 215 |
| **50%** | 146 | 152 | 152 | 150 | 149 |
| **60%** | 105 | 112 | 111 | 109 | 107 |
| **70%** | 73 | 77 | 75 | 75 | 74 |
| **80%** | 41 | 46 | 44 | 42 | 41 |
| **90%** | 28 | 28 | 28 | 27 | 27 |
| **100%** | 8 | 8 | 8 | 8 | 8 |



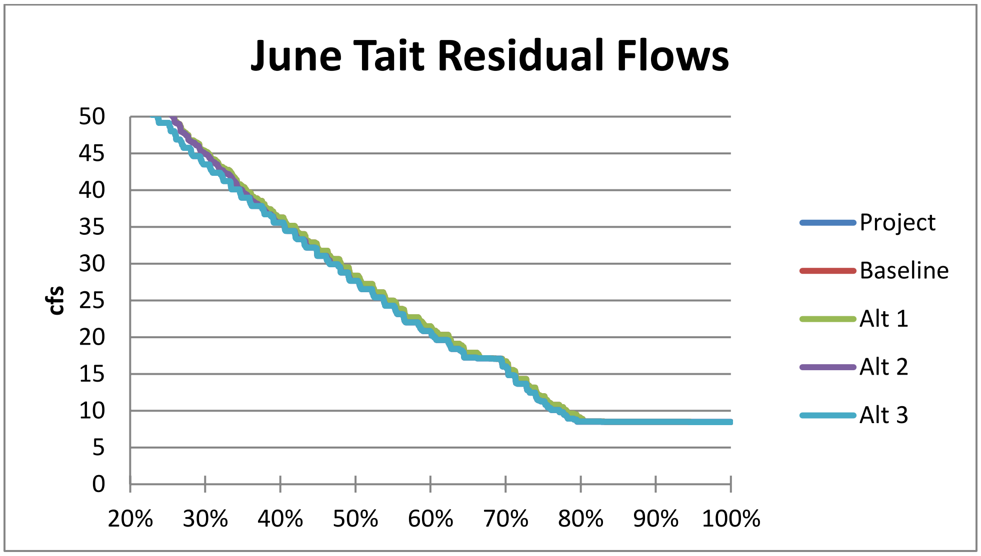

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 671 | 682 | 682 | 676 | 673 |
| **20%** | 432 | 440 | 440 | 436 | 433 |
| **30%** | 293 | 297 | 297 | 294 | 293 |
| **40%** | 204 | 211 | 210 | 208 | 207 |
| **50%** | 145 | 152 | 152 | 149 | 148 |
| **60%** | 103 | 110 | 108 | 106 | 104 |
| **70%** | 77 | 82 | 80 | 80 | 78 |
| **80%** | 54 | 59 | 57 | 57 | 55 |
| **90%** | 33 | 34 | 35 | 35 | 34 |
| **100%** | 9 | 8 | 8 | 8 | 8 |



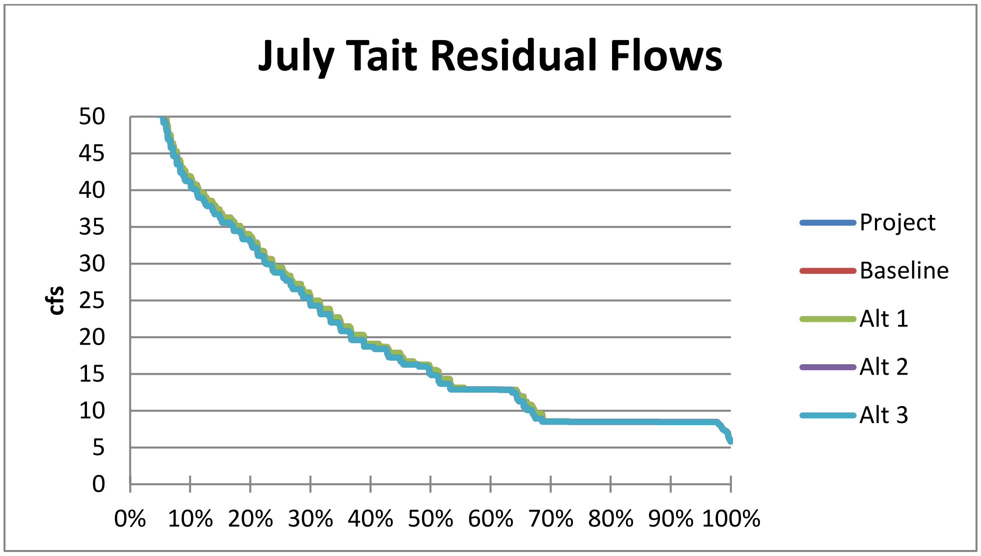

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 372 | 386 | 385 | 379 | 376 |
| **20%** | 221 | 233 | 230 | 225 | 224 |
| **30%** | 154 | 169 | 166 | 162 | 159 |
| **40%** | 113 | 123 | 121 | 118 | 116 |
| **50%** | 82 | 90 | 89 | 87 | 84 |
| **60%** | 63 | 67 | 66 | 65 | 64 |
| **70%** | 46 | 51 | 50 | 49 | 47 |
| **80%** | 33 | 32 | 35 | 33 | 34 |
| **90%** | 22 | 19 | 23 | 22 | 23 |
| **100%** | 9 | 8 | 8 | 8 | 8 |



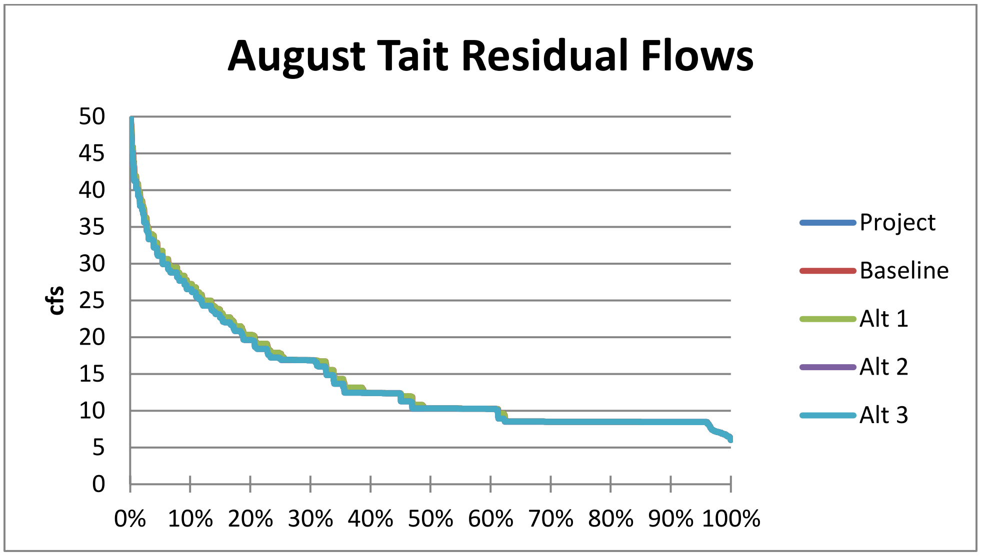

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 143 | 151 | 150 | 149 | 142 |
| **20%** | 96 | 105 | 103 | 103 | 96 |
| **30%** | 73 | 81 | 79 | 80 | 73 |
| **40%** | 59 | 67 | 66 | 66 | 59 |
| **50%** | 46 | 51 | 51 | 51 | 46 |
| **60%** | 34 | 39 | 39 | 38 | 34 |
| **70%** | 22 | 27 | 27 | 25 | 22 |
| **80%** | 15 | 16 | 16 | 15 | 15 |
| **90%** | 11 | 11 | 11 | 11 | 11 |
| **100%** | 8 | 8 | 8 | 8 | 8 |



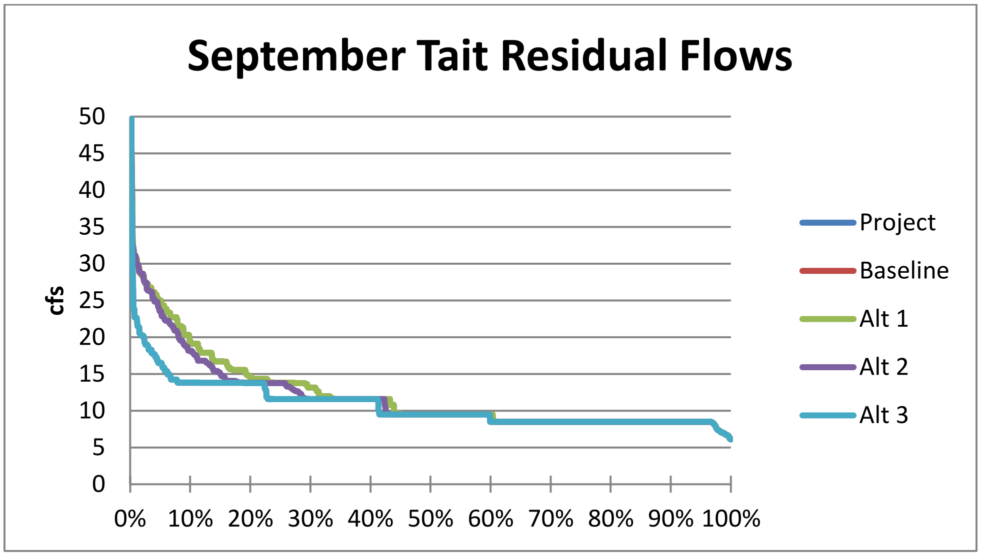

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 71 | 75 | 75 | 75 | 71 |
| **20%** | 55 | 57 | 57 | 57 | 55 |
| **30%** | 43 | 45 | 45 | 45 | 43 |
| **40%** | 36 | 36 | 36 | 36 | 36 |
| **50%** | 28 | 28 | 28 | 28 | 28 |
| **60%** | 21 | 22 | 22 | 21 | 21 |
| **70%** | 16 | 17 | 17 | 16 | 16 |
| **80%** | 9 | 9 | 9 | 9 | 9 |
| **90%** | 9 | 9 | 9 | 9 | 9 |
| **100%** | 8 | 8 | 8 | 8 | 8 |



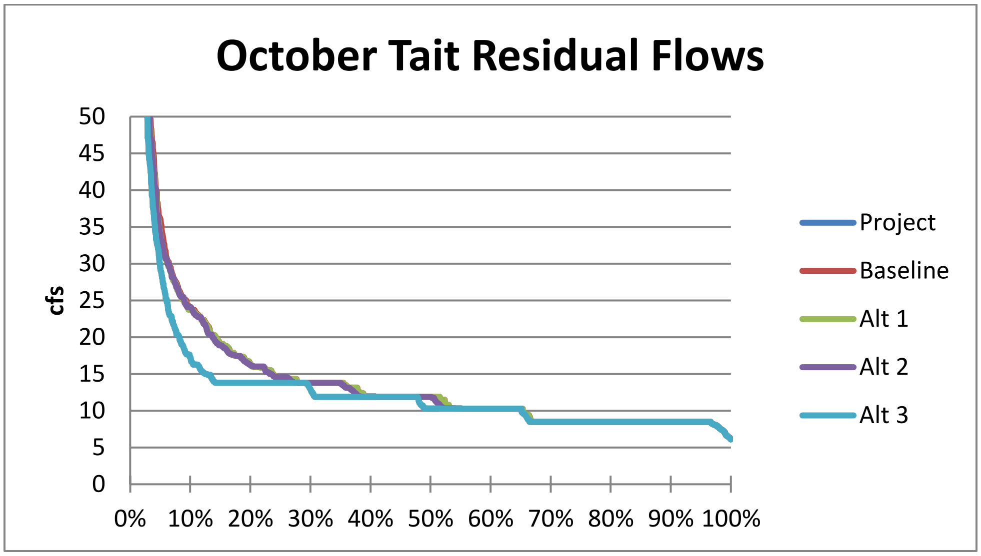

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 41 | 42 | 42 | 41 | 41 |
| **20%** | 33 | 34 | 34 | 33 | 33 |
| **30%** | 24 | 25 | 25 | 24 | 24 |
| **40%** | 19 | 19 | 19 | 19 | 19 |
| **50%** | 15 | 16 | 16 | 15 | 15 |
| **60%** | 13 | 13 | 13 | 13 | 13 |
| **70%** | 9 | 9 | 9 | 9 | 9 |
| **80%** | 9 | 9 | 9 | 9 | 9 |
| **90%** | 9 | 8 | 8 | 8 | 8 |
| **100%** | 6 | 6 | 6 | 6 | 6 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 27 | 27 | 27 | 27 | 27 |
| **20%** | 20 | 20 | 20 | 20 | 20 |
| **30%** | 17 | 17 | 17 | 17 | 17 |
| **40%** | 12 | 12 | 12 | 12 | 12 |
| **50%** | 10 | 10 | 10 | 10 | 10 |
| **60%** | 10 | 10 | 10 | 10 | 10 |
| **70%** | 9 | 9 | 9 | 9 | 9 |
| **80%** | 9 | 9 | 9 | 9 | 9 |
| **90%** | 9 | 8 | 8 | 8 | 8 |
| **100%** | 6 | 6 | 6 | 6 | 6 |

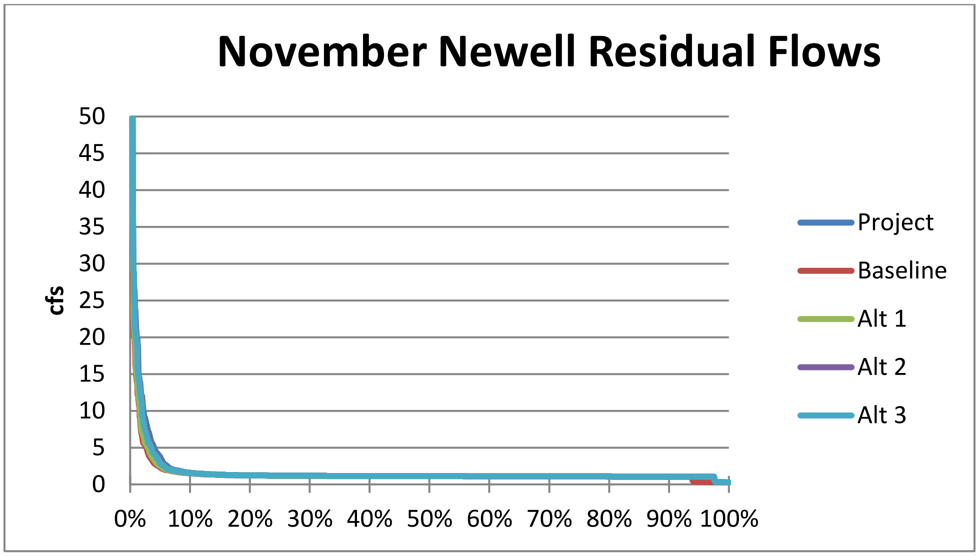



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 14 | 19 | 19 | 18 | 14 |
| **20%** | 14 | 15 | 15 | 14 | 14 |
| **30%** | 12 | 13 | 13 | 12 | 12 |
| **40%** | 12 | 12 | 12 | 12 | 12 |
| **50%** | 10 | 10 | 10 | 9 | 9 |
| **60%** | 9 | 9 | 9 | 9 | 9 |
| **70%** | 9 | 9 | 9 | 9 | 9 |
| **80%** | 9 | 9 | 9 | 9 | 9 |
| **90%** | 9 | 8 | 8 | 8 | 8 |
| **100%** | 6 | 6 | 6 | 6 | 6 |

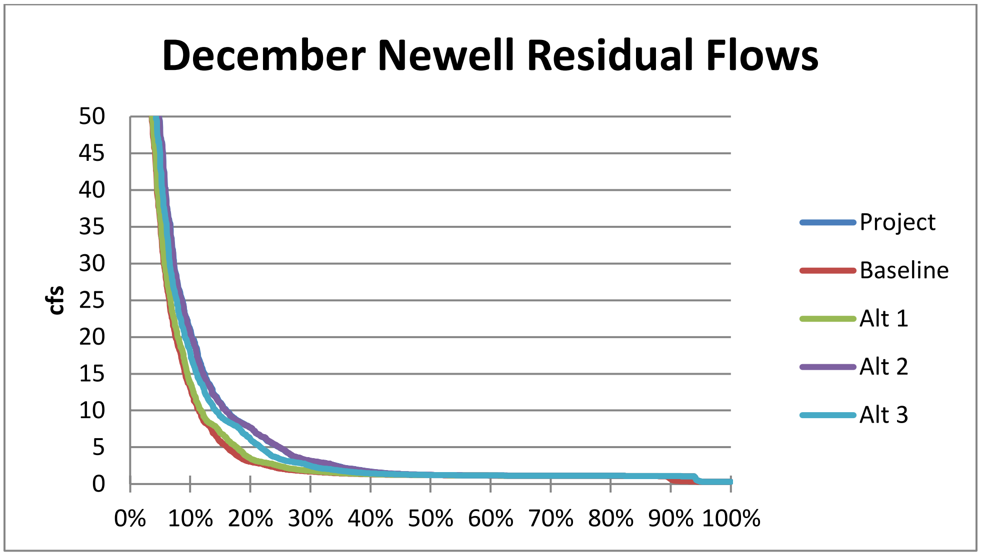



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 17 | 24 | 24 | 24 | 17 |
| **20%** | 14 | 16 | 16 | 16 | 14 |
| **30%** | 13 | 14 | 14 | 14 | 13 |
| **40%** | 12 | 12 | 12 | 12 | 12 |
| **50%** | 10 | 12 | 12 | 12 | 10 |
| **60%** | 10 | 10 | 10 | 10 | 10 |
| **70%** | 9 | 9 | 9 | 9 | 9 |
| **80%** | 9 | 8 | 8 | 8 | 8 |
| **90%** | 9 | 8 | 8 | 8 | 8 |
| **100%** | 6 | 6 | 6 | 6 | 6 |

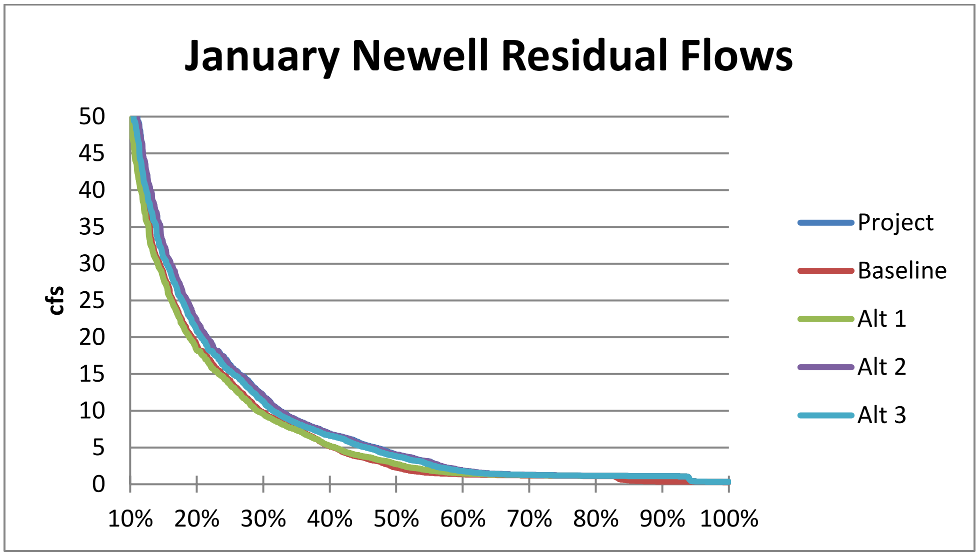
## NEWELL CREEK



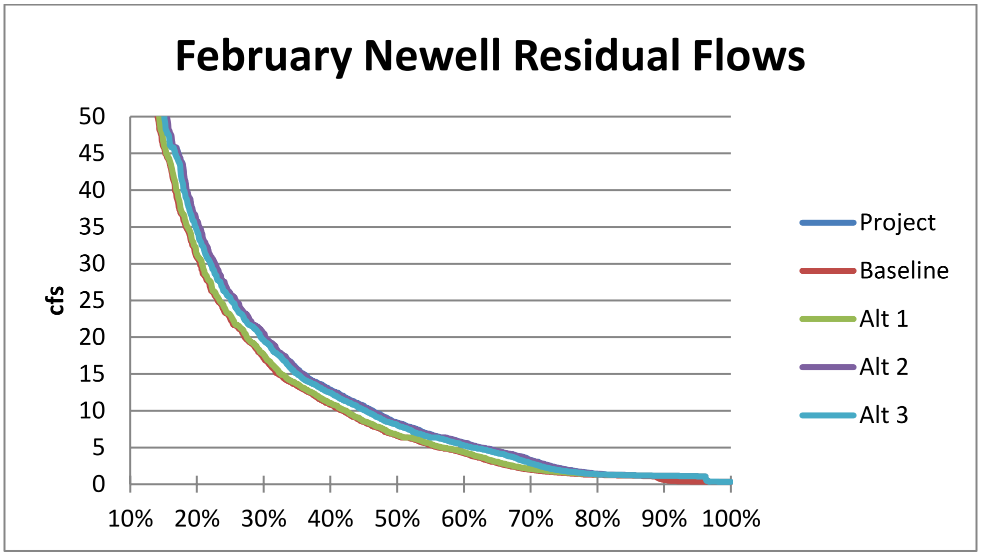

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



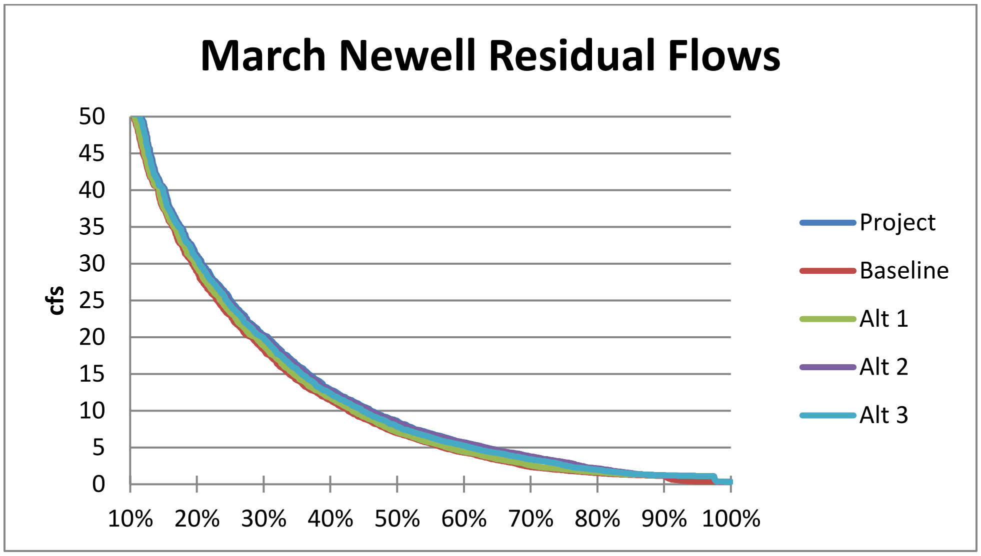

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 21 | 13 | 14 | 20 | 18 |
| **20%** | 8 | 3 | 3 | 8 | 6 |
| **30%** | 3 | 2 | 2 | 3 | 2 |
| **40%** | 2 | 1 | 1 | 2 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



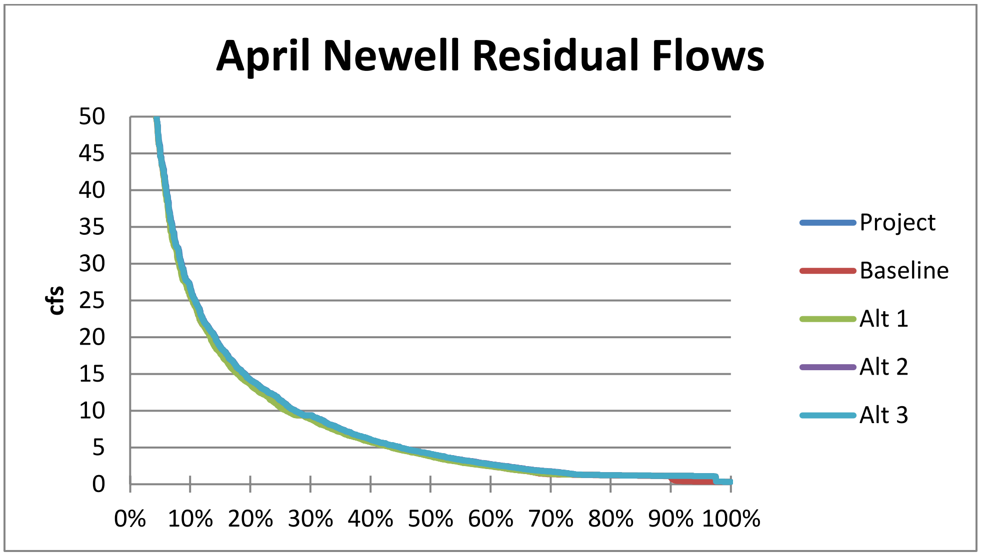

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 55 | 49 | 49 | 54 | 52 |
| **20%** | 22 | 19 | 18 | 22 | 21 |
| **30%** | 12 | 10 | 10 | 12 | 11 |
| **40%** | 7 | 5 | 5 | 7 | 7 |
| **50%** | 4 | 2 | 3 | 4 | 4 |
| **60%** | 2 | 1 | 1 | 2 | 2 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 0 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



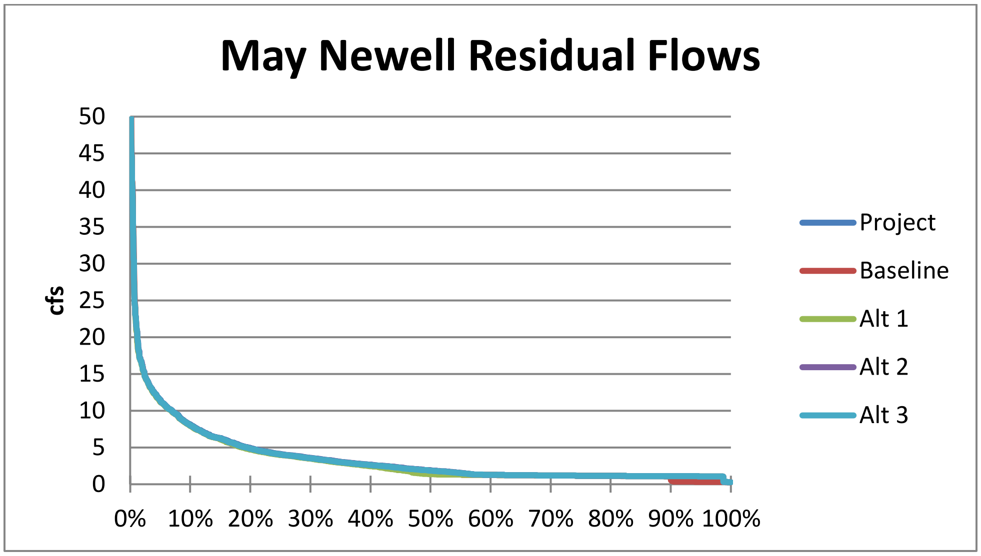

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 78 | 72 | 73 | 78 | 77 |
| **20%** | 36 | 31 | 31 | 36 | 35 |
| **30%** | 20 | 17 | 18 | 20 | 20 |
| **40%** | 13 | 11 | 11 | 13 | 12 |
| **50%** | 8 | 7 | 7 | 8 | 8 |
| **60%** | 6 | 4 | 4 | 6 | 5 |
| **70%** | 3 | 2 | 2 | 3 | 3 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



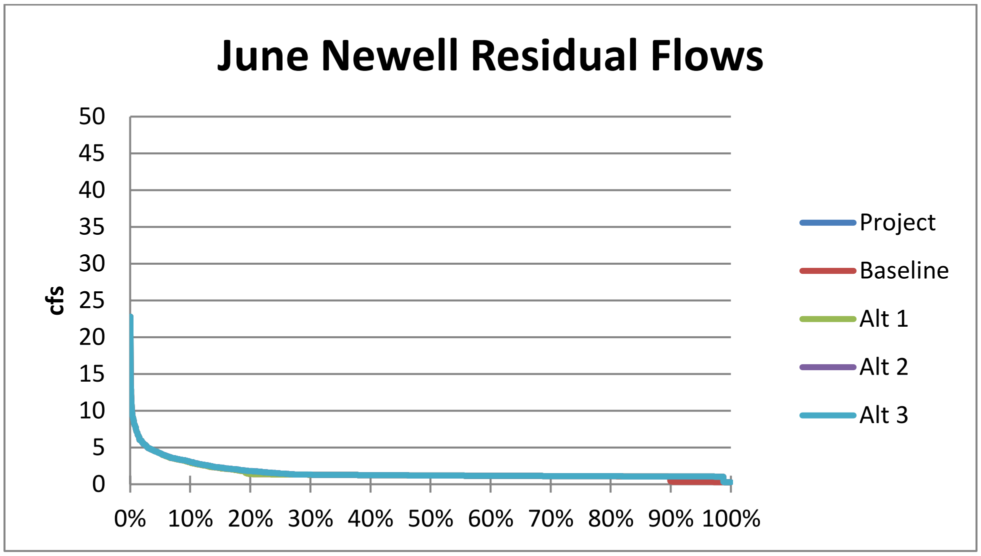

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 53 | 50 | 50 | 52 | 52 |
| **20%** | 31 | 29 | 30 | 31 | 31 |
| **30%** | 20 | 18 | 19 | 20 | 20 |
| **40%** | 13 | 11 | 12 | 13 | 12 |
| **50%** | 9 | 7 | 7 | 8 | 8 |
| **60%** | 6 | 4 | 4 | 6 | 5 |
| **70%** | 4 | 2 | 3 | 4 | 3 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



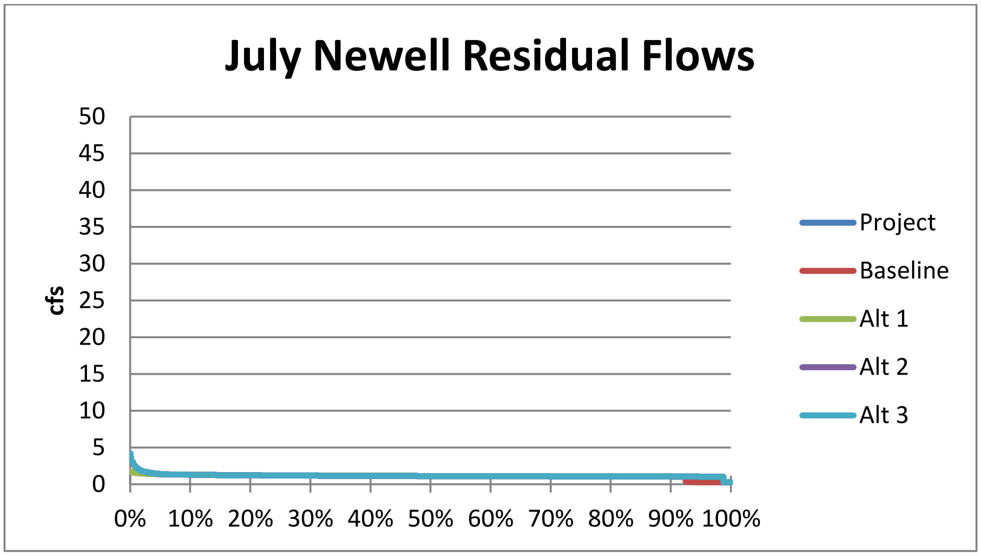

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 27 | 26 | 26 | 27 | 27 |
| **20%** | 14 | 14 | 14 | 14 | 14 |
| **30%** | 9 | 9 | 9 | 9 | 9 |
| **40%** | 6 | 6 | 6 | 6 | 6 |
| **50%** | 4 | 4 | 4 | 4 | 4 |
| **60%** | 3 | 2 | 2 | 3 | 3 |
| **70%** | 2 | 1 | 1 | 2 | 2 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



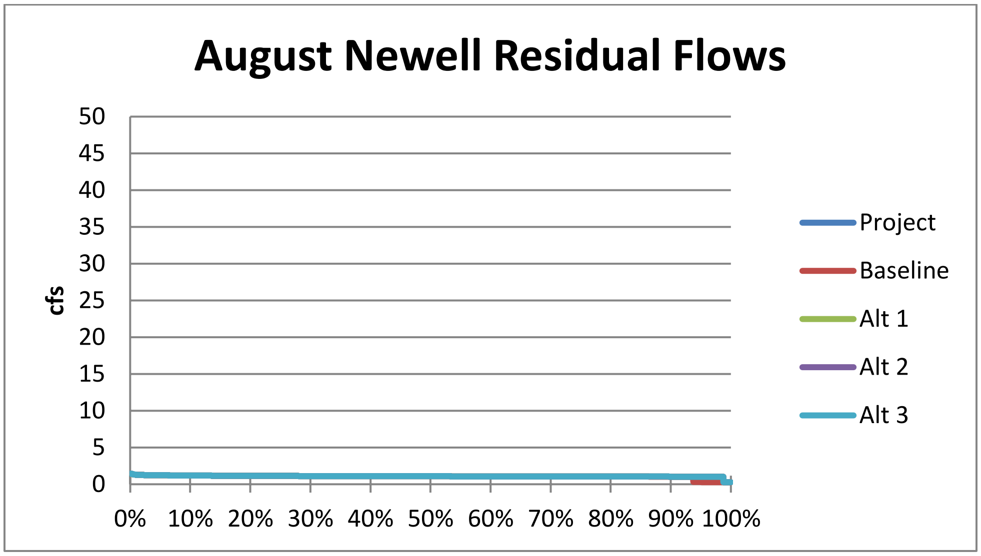

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 8 | 8 | 8 | 8 | 8 |
| **20%** | 5 | 5 | 5 | 5 | 5 |
| **30%** | 4 | 4 | 3 | 4 | 4 |
| **40%** | 3 | 3 | 2 | 3 | 3 |
| **50%** | 2 | 1 | 1 | 2 | 2 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



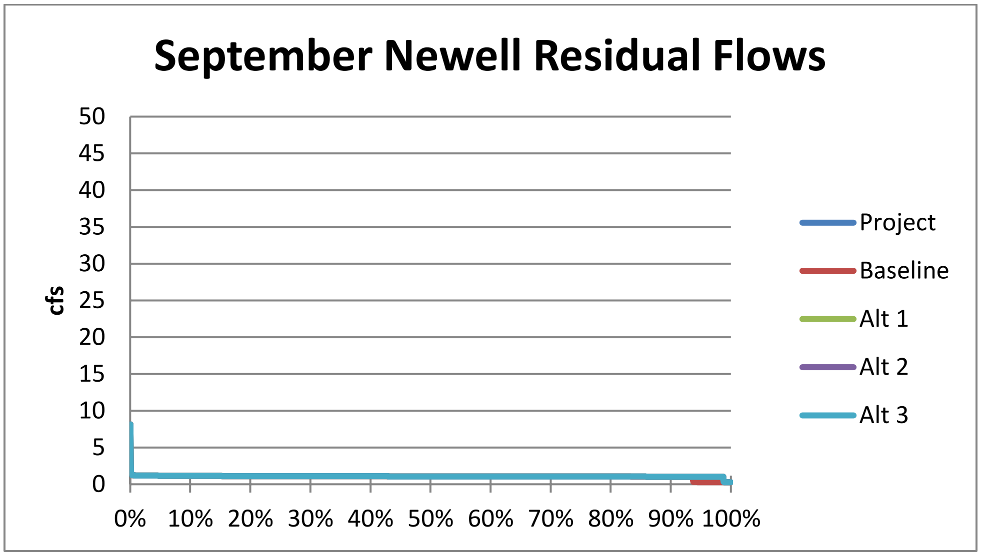

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 3 | 3 | 3 | 3 | 3 |
| **20%** | 2 | 1 | 1 | 2 | 2 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 0 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



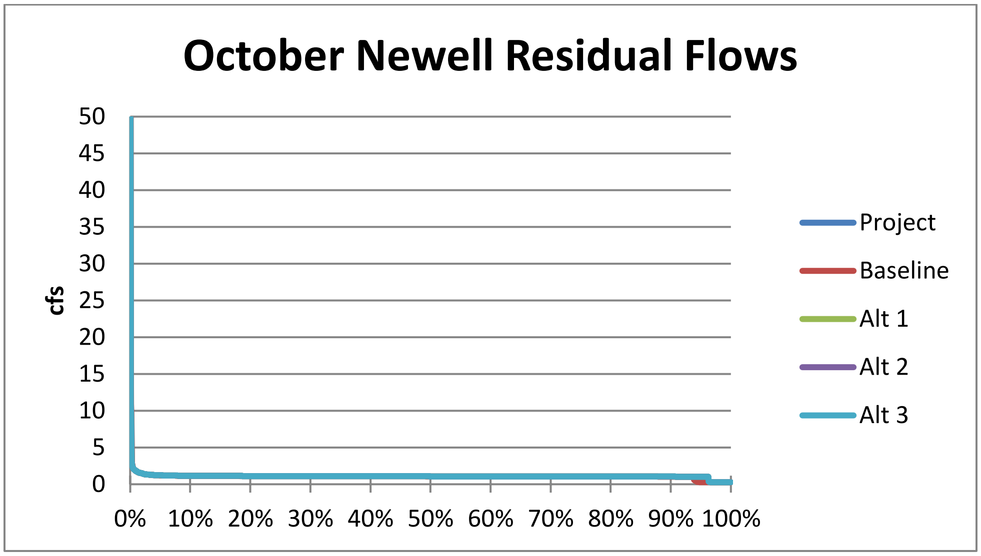

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 1 | 1 | 1 | 1 | 1 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 1 | 1 | 1 | 1 | 1 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |

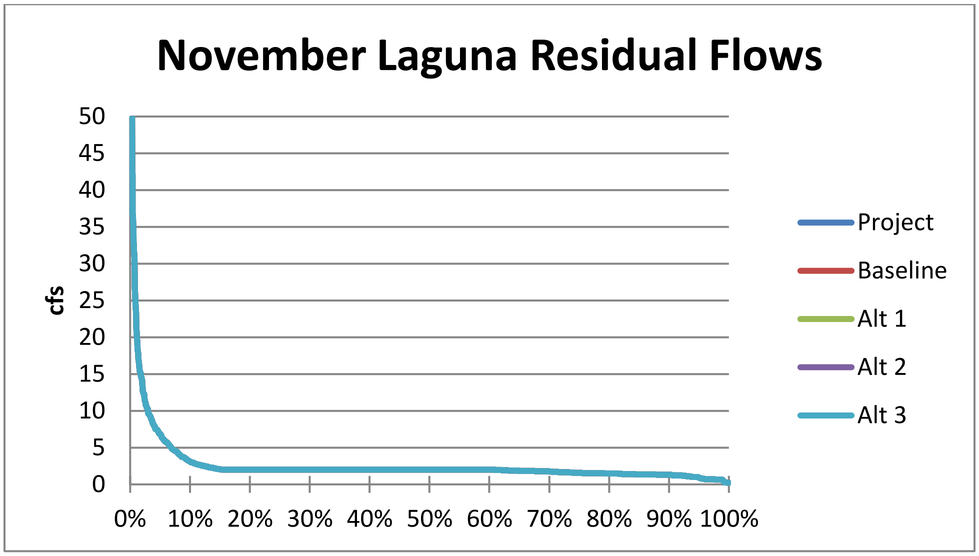



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 1 | 1 | 1 | 1 | 1 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |

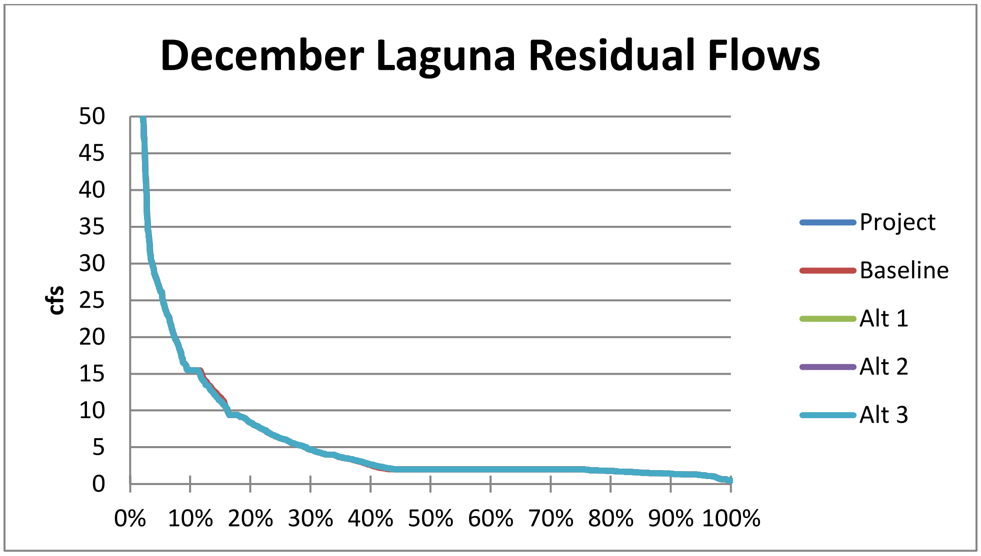



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 1 | 1 | 1 | 1 | 1 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |

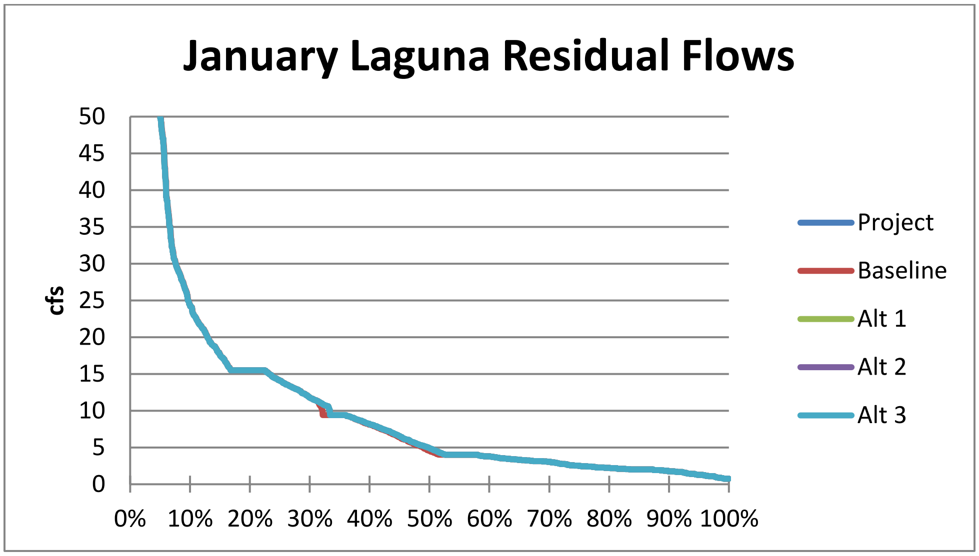
## LAGUNA



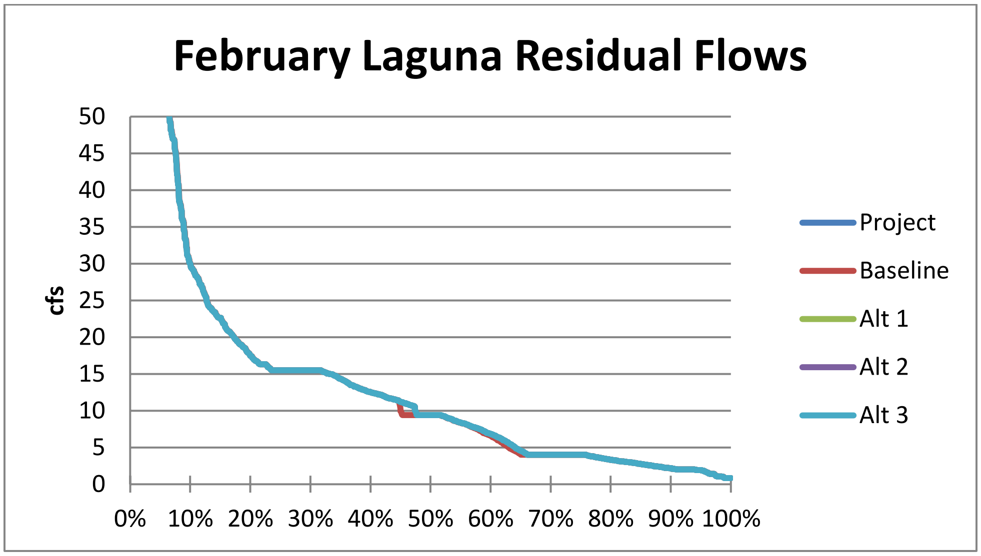

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 3 | 3 | 3 | 3 | 3 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



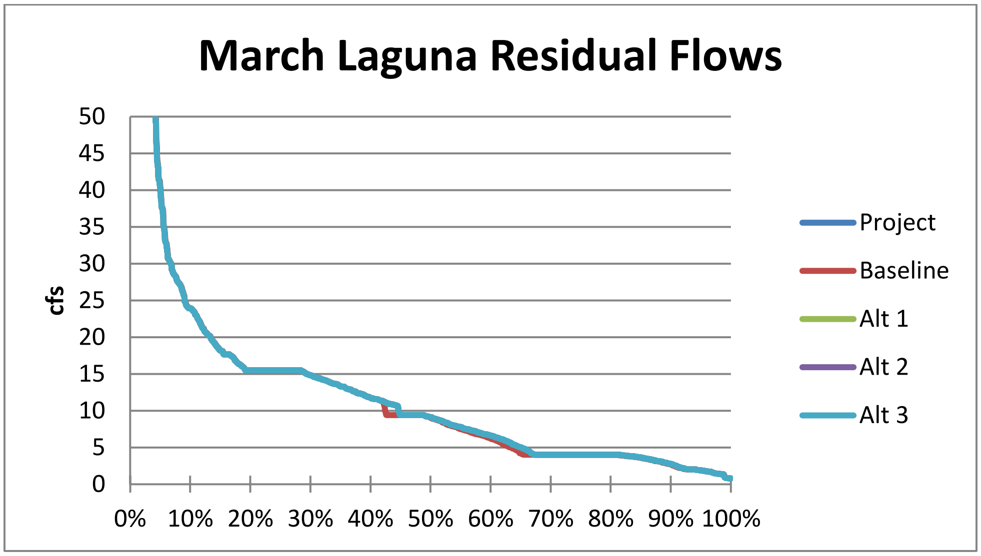

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 16 | 16 | 16 | 16 | 16 |
| **20%** | 8 | 8 | 8 | 8 | 8 |
| **30%** | 5 | 5 | 5 | 5 | 5 |
| **40%** | 3 | 3 | 3 | 3 | 3 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



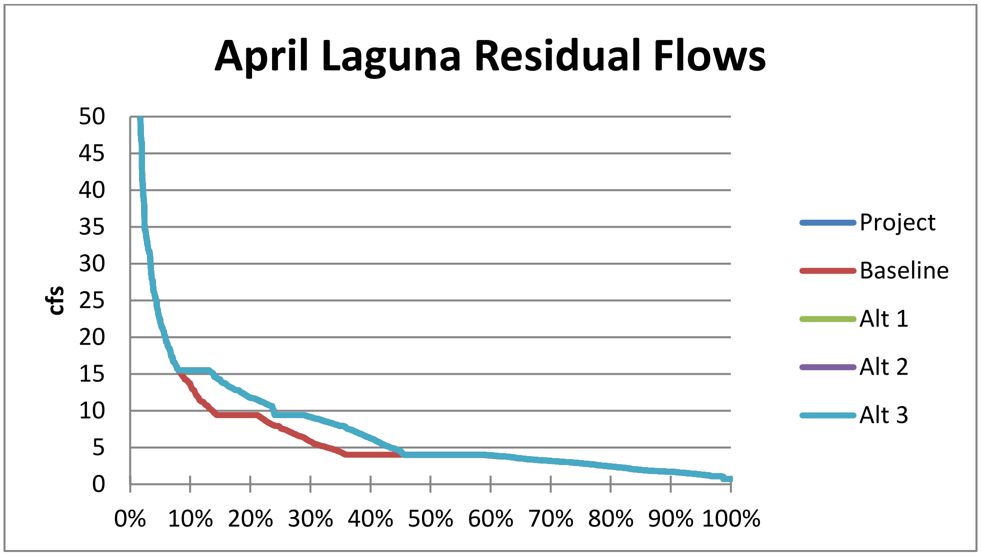

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 24 | 24 | 24 | 24 | 24 |
| **20%** | 16 | 16 | 16 | 16 | 16 |
| **30%** | 12 | 12 | 12 | 12 | 12 |
| **40%** | 8 | 8 | 8 | 8 | 8 |
| **50%** | 5 | 5 | 5 | 5 | 5 |
| **60%** | 4 | 4 | 4 | 4 | 4 |
| **70%** | 3 | 3 | 3 | 3 | 3 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 2 | 2 | 2 | 2 | 2 |
| **100%** | 1 | 1 | 1 | 1 | 1 |



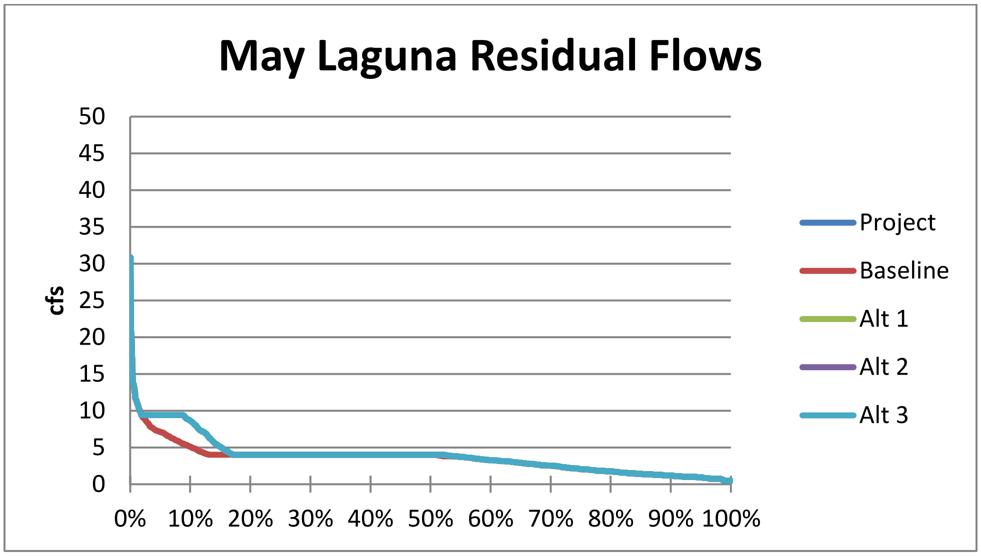

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 30 | 30 | 30 | 30 | 30 |
| **20%** | 17 | 17 | 17 | 17 | 17 |
| **30%** | 15 | 15 | 15 | 15 | 15 |
| **40%** | 13 | 13 | 13 | 13 | 13 |
| **50%** | 9 | 9 | 9 | 9 | 9 |
| **60%** | 7 | 7 | 7 | 7 | 7 |
| **70%** | 4 | 4 | 4 | 4 | 4 |
| **80%** | 3 | 3 | 3 | 3 | 3 |
| **90%** | 2 | 2 | 2 | 2 | 2 |
| **100%** | 1 | 1 | 1 | 1 | 1 |



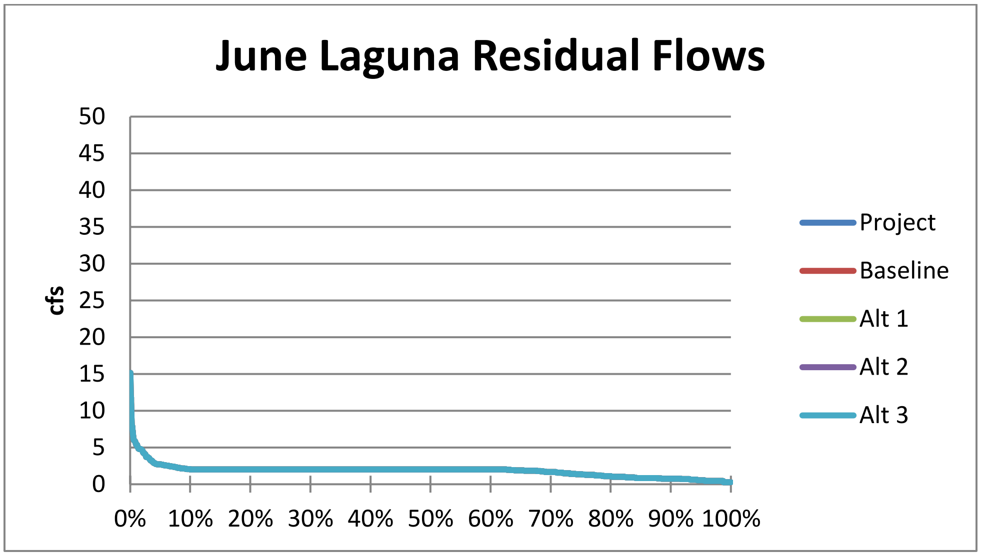

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 24 | 24 | 24 | 24 | 24 |
| **20%** | 16 | 16 | 16 | 16 | 16 |
| **30%** | 15 | 15 | 15 | 15 | 15 |
| **40%** | 12 | 12 | 12 | 12 | 12 |
| **50%** | 9 | 9 | 9 | 9 | 9 |
| **60%** | 7 | 6 | 7 | 7 | 7 |
| **70%** | 4 | 4 | 4 | 4 | 4 |
| **80%** | 4 | 4 | 4 | 4 | 4 |
| **90%** | 3 | 3 | 3 | 3 | 3 |
| **100%** | 1 | 1 | 1 | 1 | 1 |



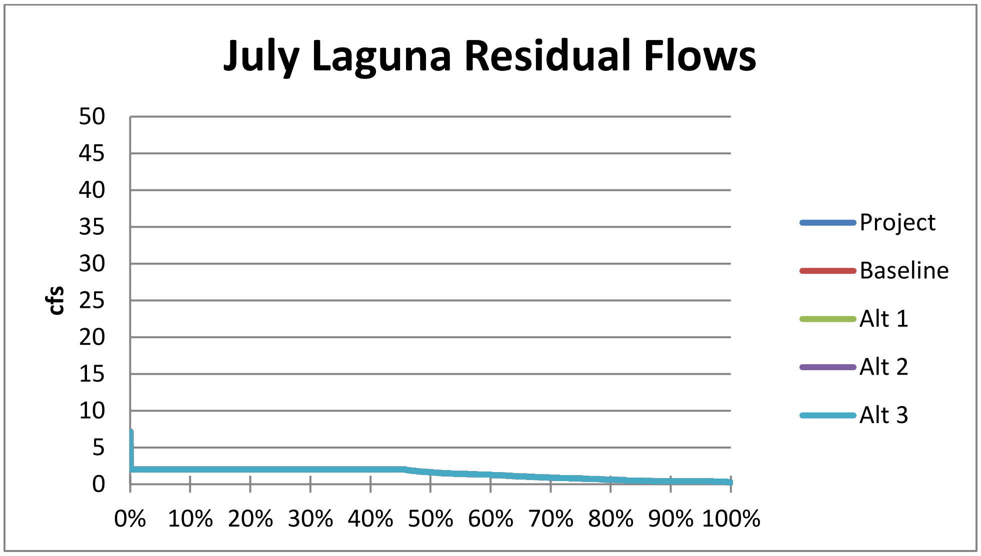

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 16 | 14 | 16 | 16 | 16 |
| **20%** | 12 | 9 | 12 | 12 | 12 |
| **30%** | 9 | 6 | 9 | 9 | 9 |
| **40%** | 6 | 4 | 6 | 6 | 6 |
| **50%** | 4 | 4 | 4 | 4 | 4 |
| **60%** | 4 | 4 | 4 | 4 | 4 |
| **70%** | 3 | 3 | 3 | 3 | 3 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 2 | 2 | 2 | 2 | 2 |
| **100%** | 1 | 1 | 1 | 1 | 1 |



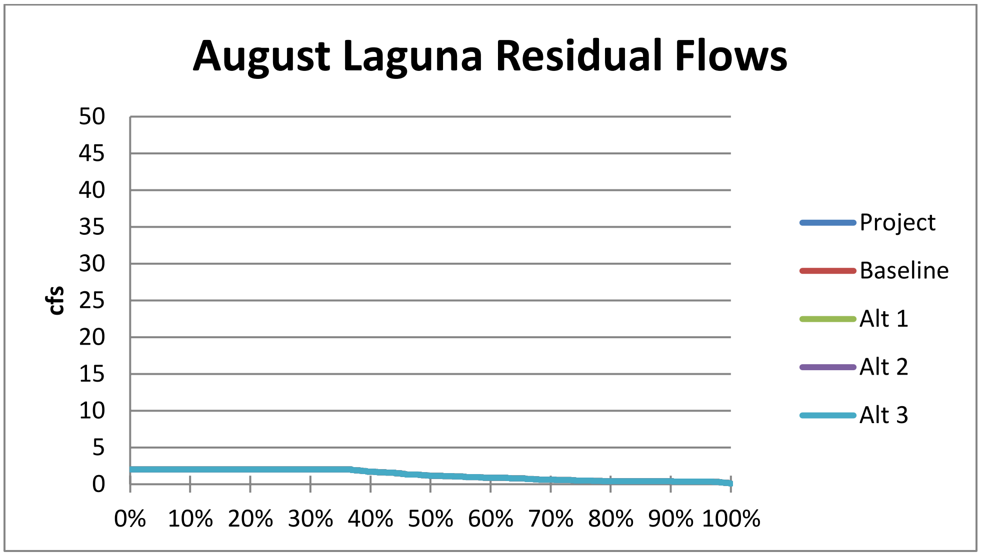

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 9 | 5 | 9 | 9 | 9 |
| **20%** | 4 | 4 | 4 | 4 | 4 |
| **30%** | 4 | 4 | 4 | 4 | 4 |
| **40%** | 4 | 4 | 4 | 4 | 4 |
| **50%** | 4 | 4 | 4 | 4 | 4 |
| **60%** | 3 | 3 | 3 | 3 | 3 |
| **70%** | 3 | 3 | 3 | 3 | 3 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



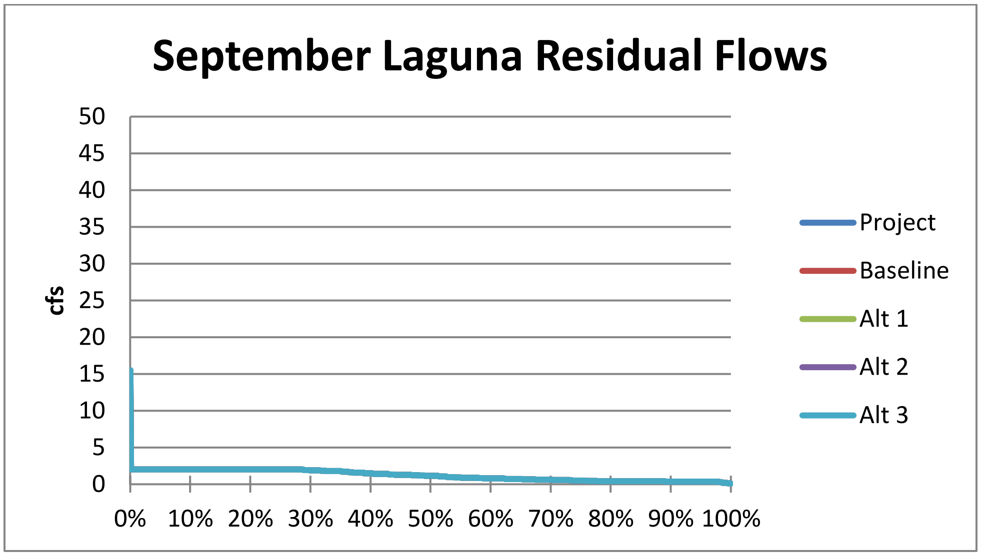

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |



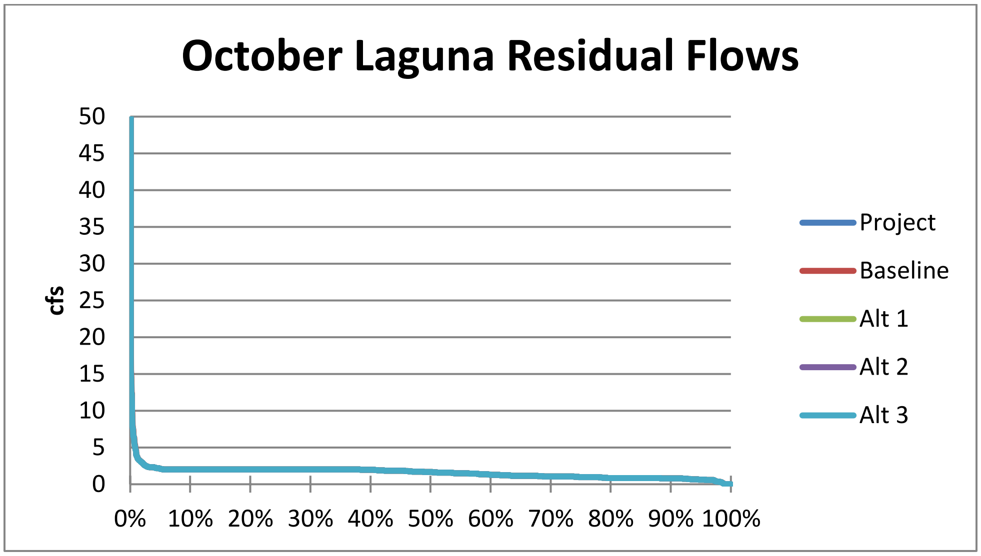

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
| **100%** | 0 | 0 | 0 | 0 | 0 |

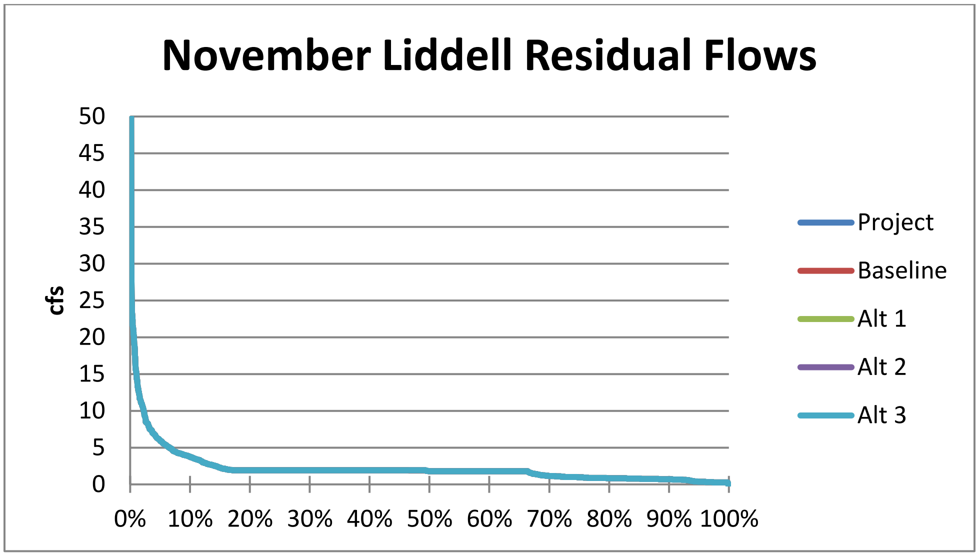



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
| **100%** | 0 | 0 | 0 | 0 | 0 |

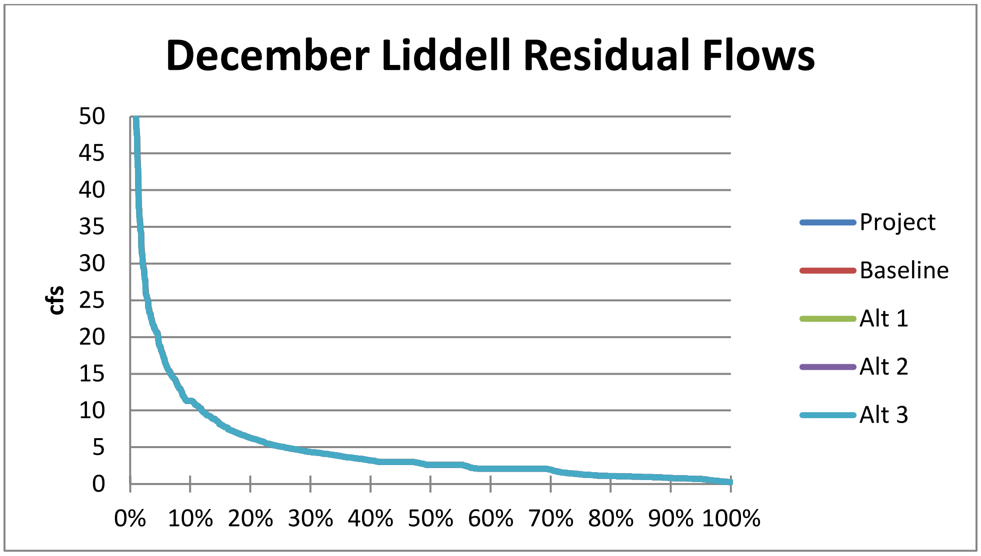



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |

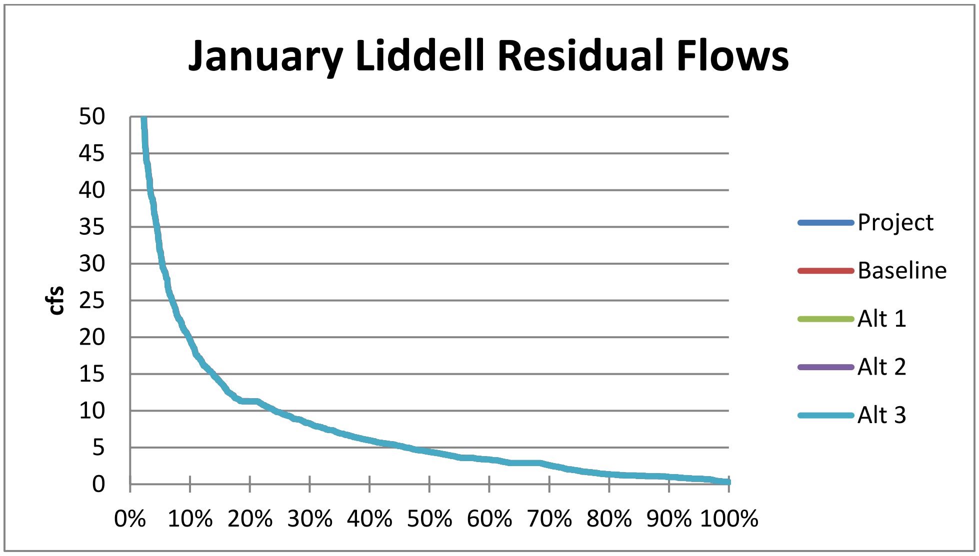
**LIDDELL**



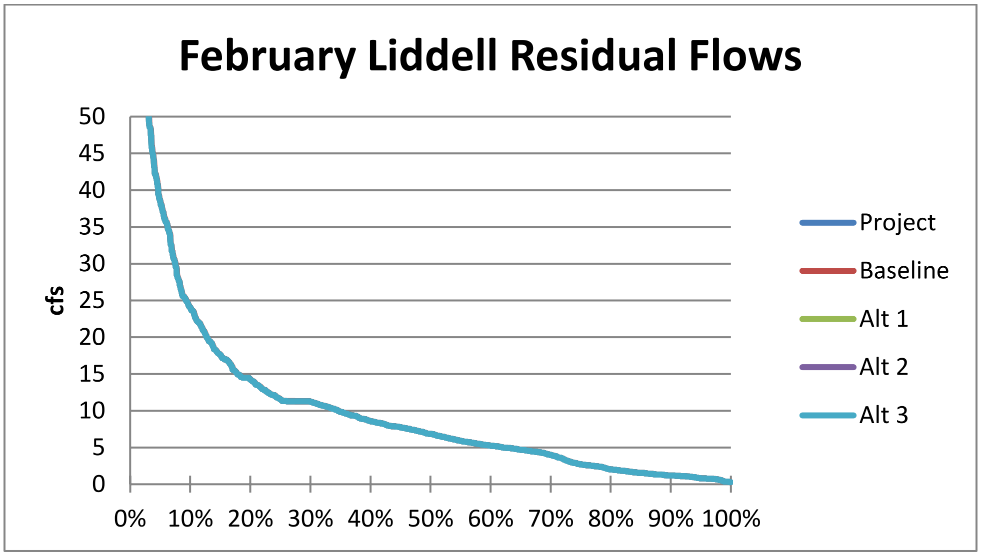

| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 4 | 4 | 4 | 4 | 4 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 11 | 11 | 11 | 11 | 11 |
| **20%** | 6 | 6 | 6 | 6 | 6 |
| **30%** | 4 | 4 | 4 | 4 | 4 |
| **40%** | 3 | 3 | 3 | 3 | 3 |
| **50%** | 3 | 3 | 3 | 3 | 3 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 20 | 20 | 20 | 20 | 20 |
| **20%** | 11 | 11 | 11 | 11 | 11 |
| **30%** | 8 | 8 | 8 | 8 | 8 |
| **40%** | 6 | 6 | 6 | 6 | 6 |
| **50%** | 4 | 4 | 4 | 4 | 4 |
| **60%** | 3 | 3 | 3 | 3 | 3 |
| **70%** | 3 | 3 | 3 | 3 | 3 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 24 | 24 | 24 | 24 | 24 |
| **20%** | 14 | 14 | 14 | 14 | 14 |
| **30%** | 11 | 11 | 11 | 11 | 11 |
| **40%** | 9 | 9 | 9 | 9 | 9 |
| **50%** | 7 | 7 | 7 | 7 | 7 |
| **60%** | 5 | 5 | 5 | 5 | 5 |
| **70%** | 4 | 4 | 4 | 4 | 4 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
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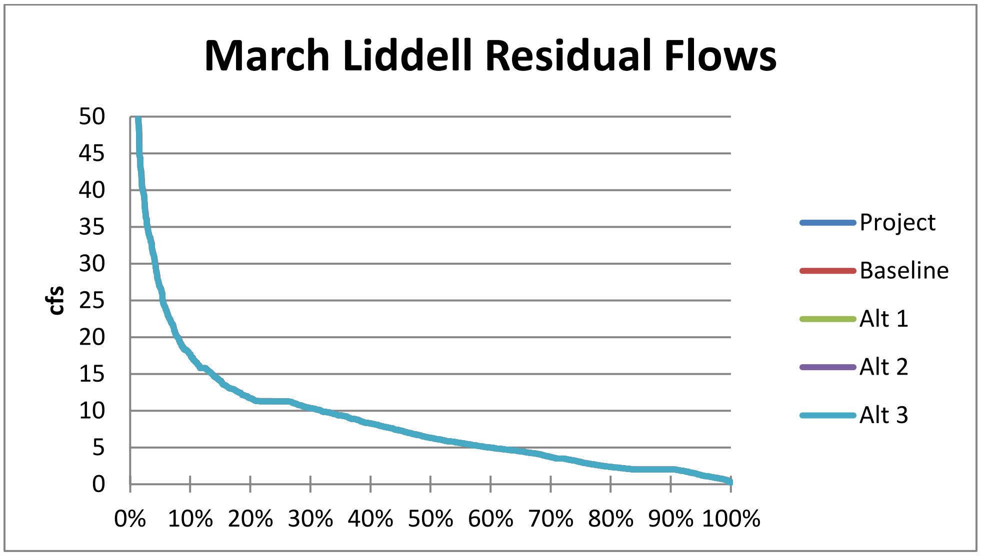
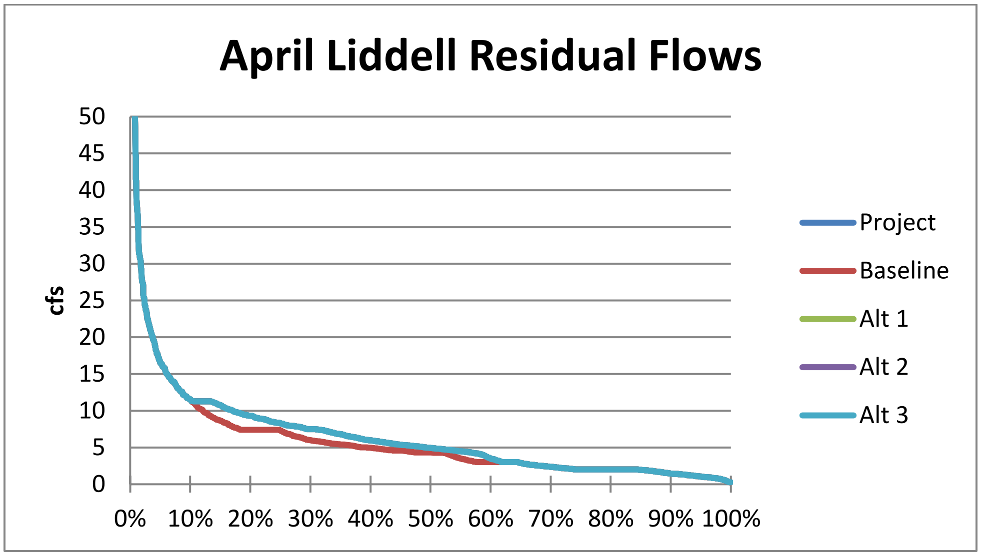



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 18 | 18 | 18 | 18 | 18 |
| **20%** | 12 | 12 | 12 | 12 | 12 |
| **30%** | 10 | 10 | 10 | 10 | 10 |
| **40%** | 8 | 8 | 8 | 8 | 8 |
| **50%** | 6 | 6 | 6 | 6 | 6 |
| **60%** | 5 | 5 | 5 | 5 | 5 |
| **70%** | 4 | 4 | 4 | 4 | 4 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 2 | 2 | 2 | 2 | 2 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
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| **10%** | 12 | 12 | 12 | 12 | 12 |
| **20%** | 9 | 7 | 9 | 9 | 9 |
| **30%** | 8 | 6 | 8 | 8 | 8 |
| **40%** | 6 | 5 | 6 | 6 | 6 |
| **50%** | 5 | 4 | 5 | 5 | 5 |
| **60%** | 3 | 3 | 3 | 3 | 3 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
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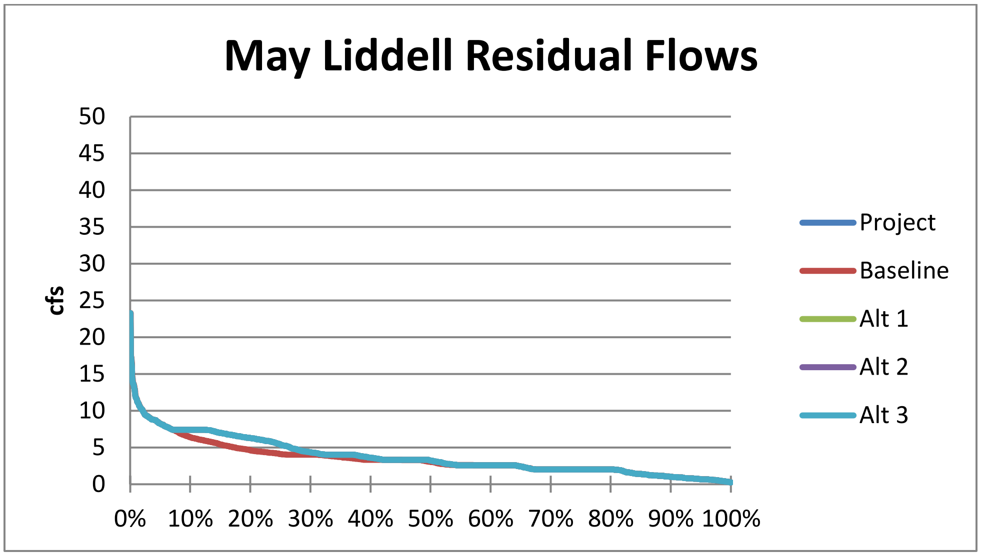


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
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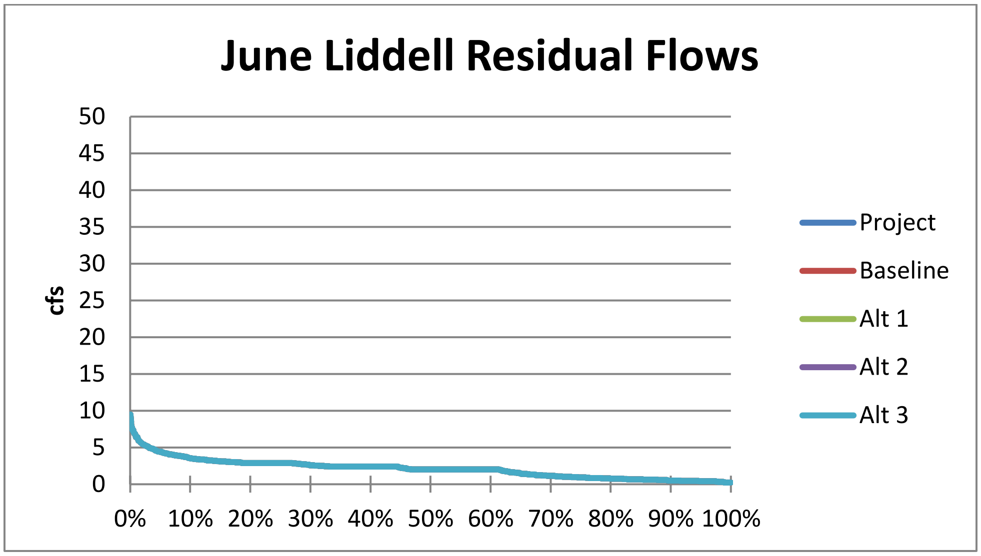
| **20%** | 6 | 5 | 6 | 6 | 6 |
| **30%** | 4 | 4 | 4 | 4 | 4 |
| **40%** | 4 | 3 | 4 | 4 | 4 |
| **50%** | 3 | 3 | 3 | 3 | 3 |
| **60%** | 3 | 3 | 3 | 3 | 3 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 2 | 2 | 2 | 2 | 2 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
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| **20%** | 3 | 3 | 3 | 3 | 3 |
| **30%** | 3 | 3 | 3 | 3 | 3 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 1 | 1 | 1 | 1 | 1 |
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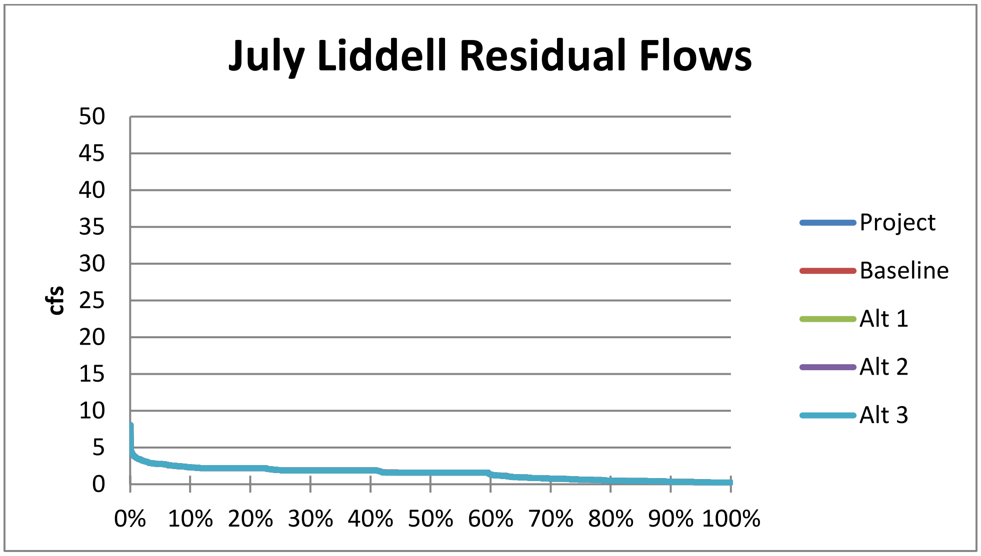


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
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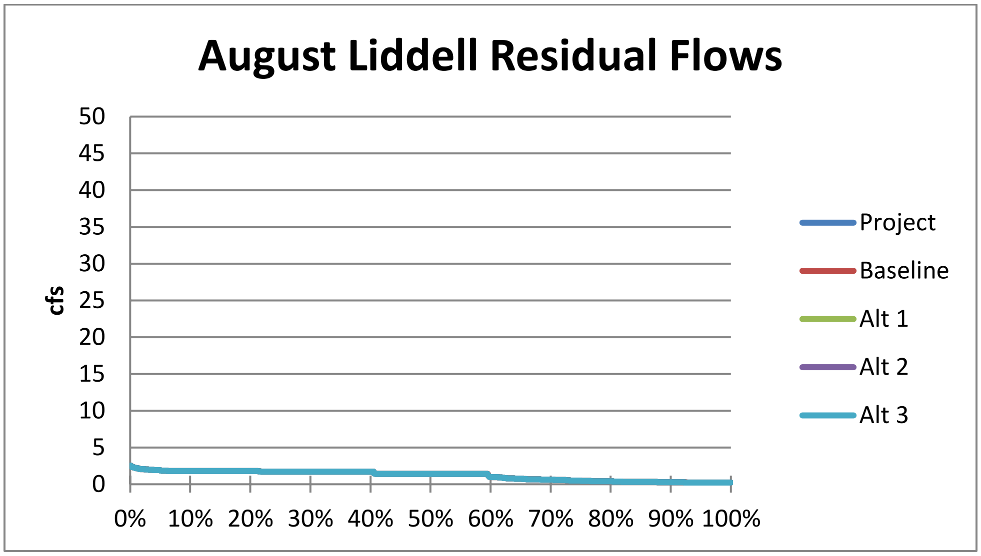


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
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| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
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| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
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| **90%** | 0 | 0 | 0 | 0 | 0 |
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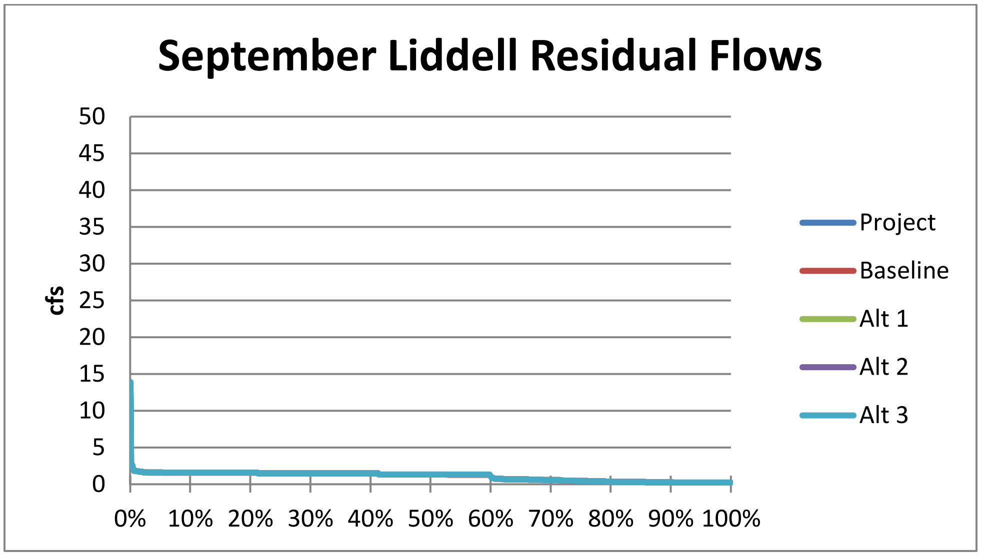


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
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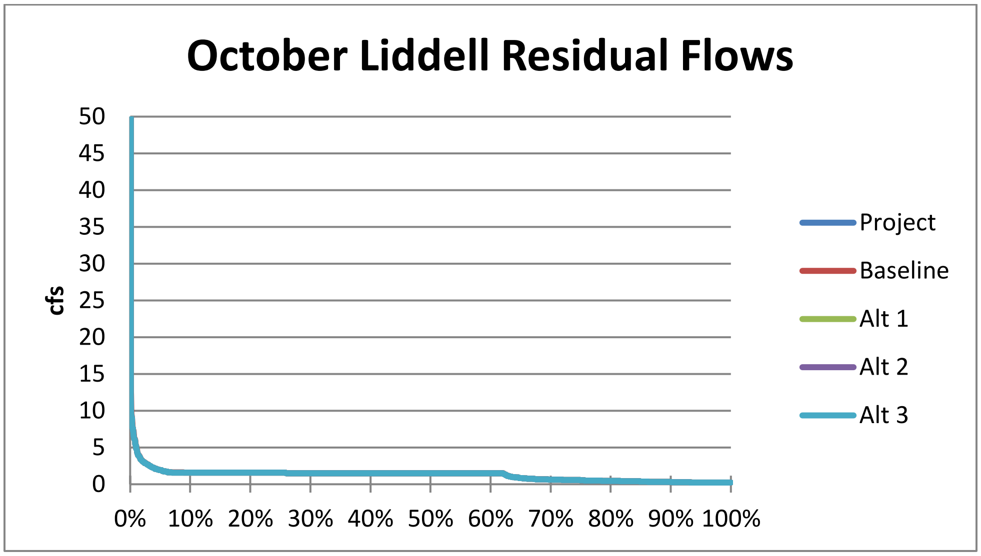


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
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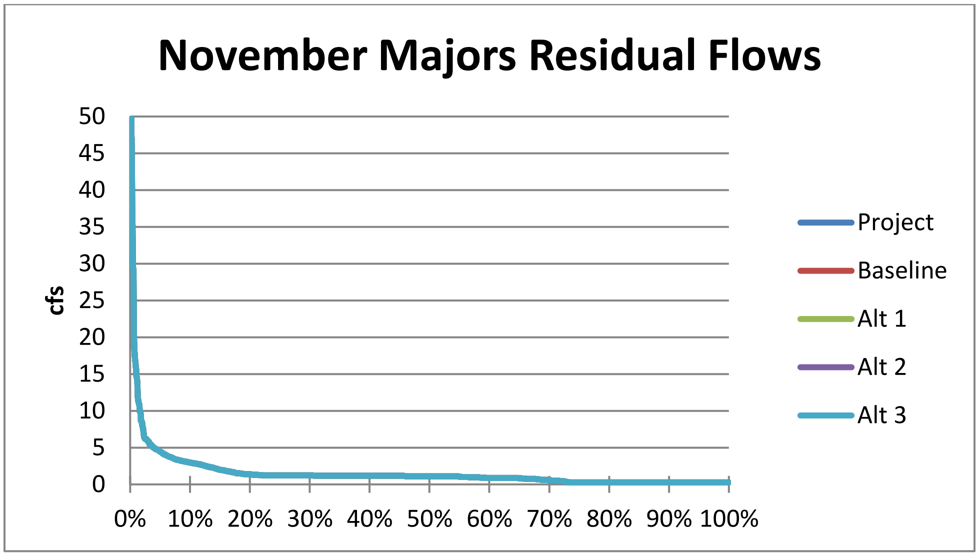
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 2 | 2 | 2 | 2 | 2 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
| **100%** | 0 | 0 | 0 | 0 | 0 |

**MAJORS**

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| **10%** | 3 | 3 | 3 | 3 | 3 |
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| **30%** | 1 | 1 | 1 | 1 | 1 |
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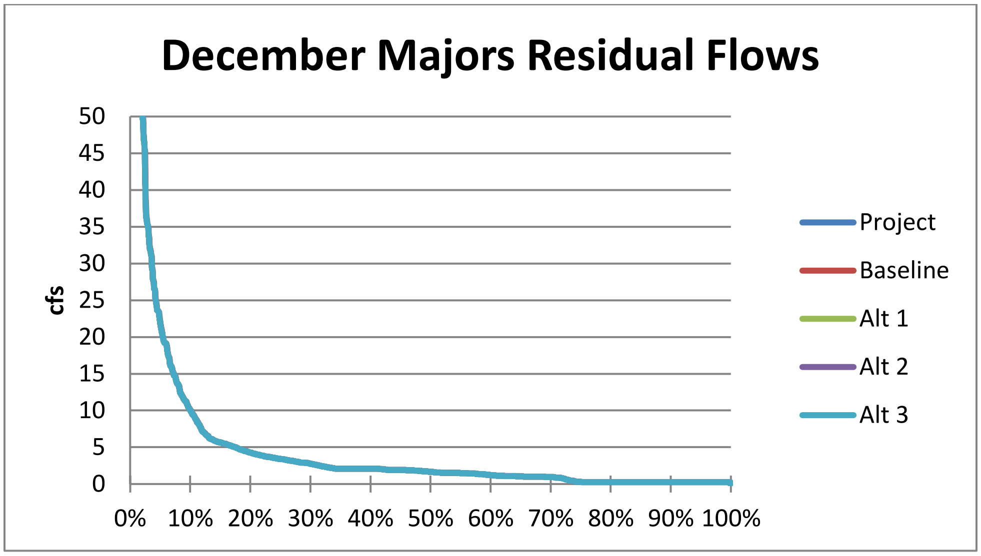
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 10 | 10 | 10 | 10 | 10 |
| **20%** | 4 | 4 | 4 | 4 | 4 |
| **30%** | 3 | 3 | 3 | 3 | 3 |
| **40%** | 2 | 2 | 2 | 2 | 2 |
| **50%** | 2 | 2 | 2 | 2 | 2 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
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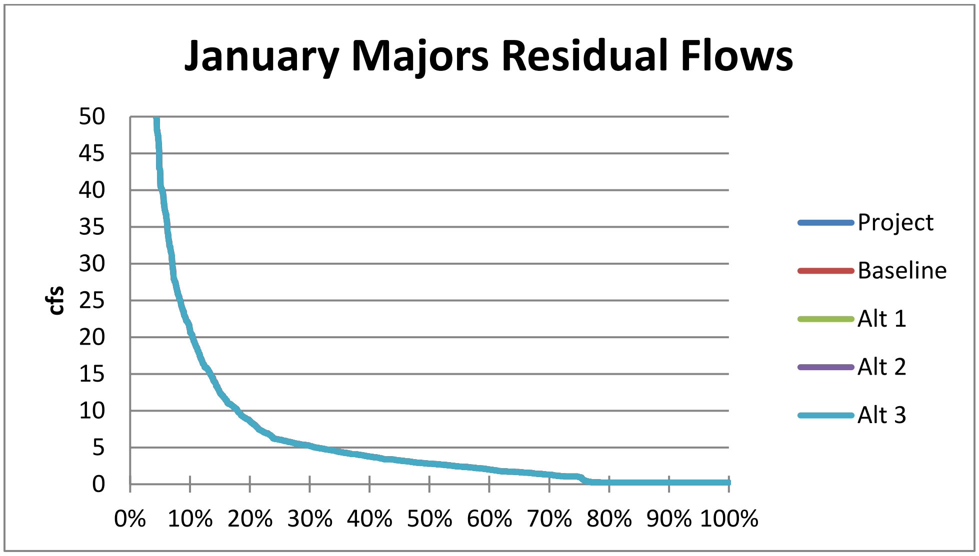


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 21 | 21 | 21 | 21 | 21 |
| **20%** | 9 | 9 | 9 | 9 | 9 |
| **30%** | 5 | 5 | 5 | 5 | 5 |
| **40%** | 4 | 4 | 4 | 4 | 4 |
| **50%** | 3 | 3 | 3 | 3 | 3 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
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| **90%** | 0 | 0 | 0 | 0 | 0 |
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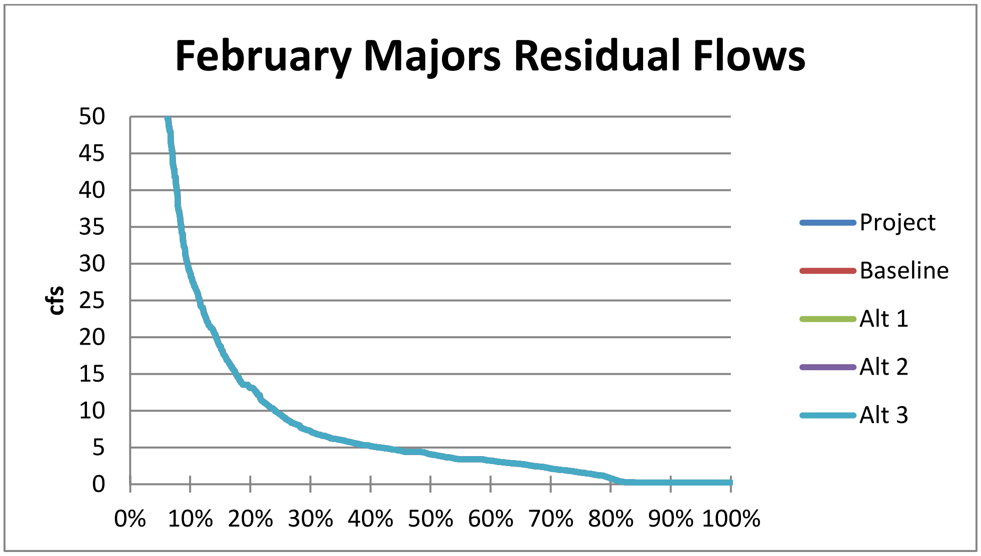


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 29 | 29 | 29 | 29 | 29 |
| **20%** | 13 | 13 | 13 | 13 | 13 |
| **30%** | 7 | 7 | 7 | 7 | 7 |
| **40%** | 5 | 5 | 5 | 5 | 5 |
| **50%** | 4 | 4 | 4 | 4 | 4 |
| **60%** | 3 | 3 | 3 | 3 | 3 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
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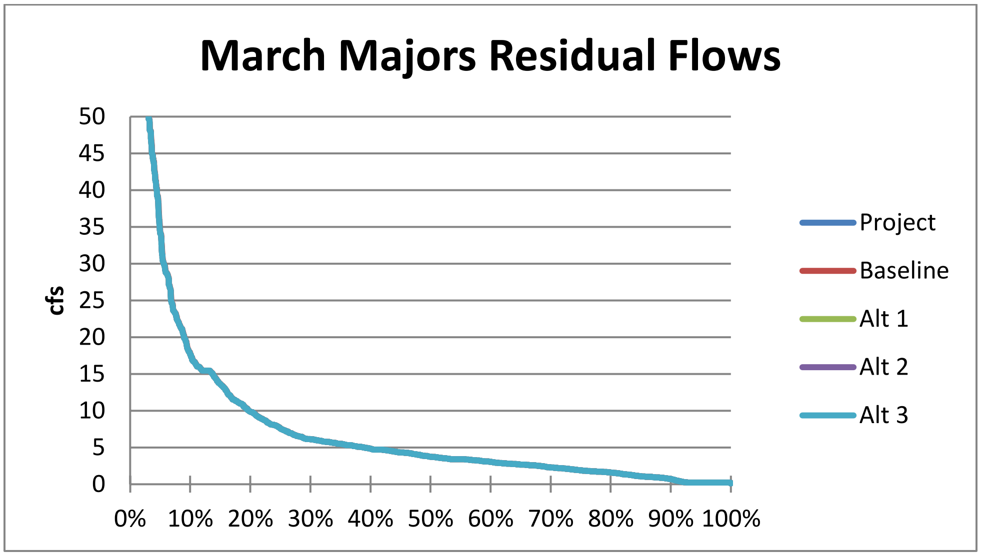


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 18 | 18 | 18 | 18 | 18 |
| **20%** | 10 | 10 | 10 | 10 | 10 |
| **30%** | 6 | 6 | 6 | 6 | 6 |
| **40%** | 5 | 5 | 5 | 5 | 5 |
| **50%** | 4 | 4 | 4 | 4 | 4 |
| **60%** | 3 | 3 | 3 | 3 | 3 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
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| **90%** | 1 | 1 | 1 | 1 | 1 |
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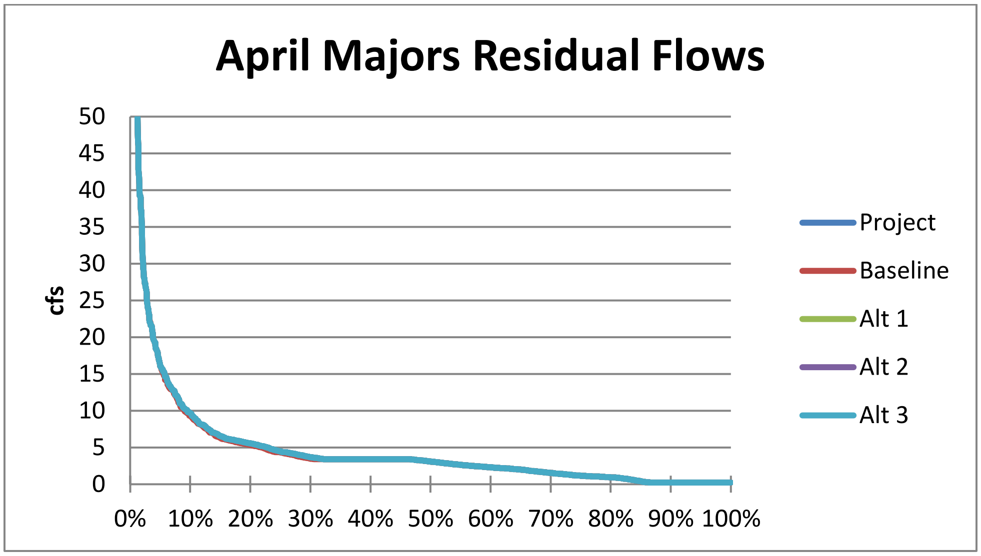


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 10 | 9 | 10 | 10 | 10 |
| **20%** | 6 | 5 | 6 | 6 | 6 |
| **30%** | 4 | 3 | 4 | 4 | 4 |
| **40%** | 3 | 3 | 3 | 3 | 3 |
| **50%** | 3 | 3 | 3 | 3 | 3 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 2 | 2 | 2 | 2 | 2 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
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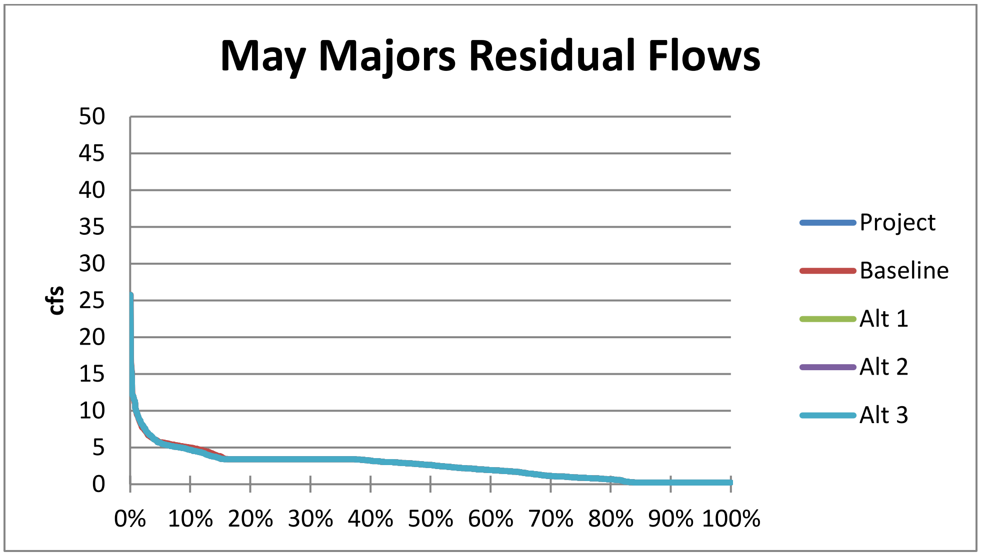


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 5 | 5 | 5 | 5 | 5 |
| **20%** | 3 | 3 | 3 | 3 | 3 |
| **30%** | 3 | 3 | 3 | 3 | 3 |
| **40%** | 3 | 3 | 3 | 3 | 3 |
| **50%** | 3 | 3 | 3 | 3 | 3 |
| **60%** | 2 | 2 | 2 | 2 | 2 |
| **70%** | 1 | 1 | 1 | 1 | 1 |
| **80%** | 1 | 1 | 1 | 1 | 1 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
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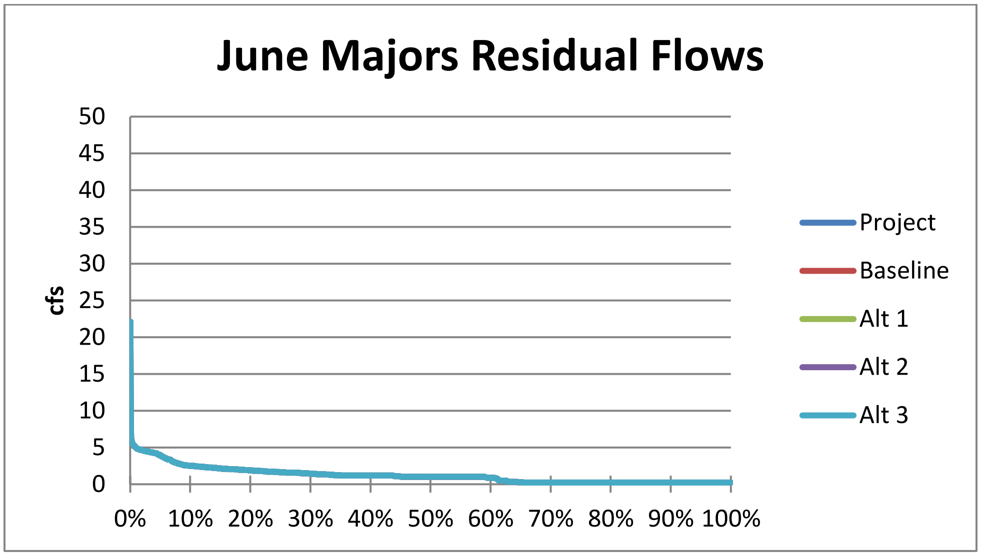
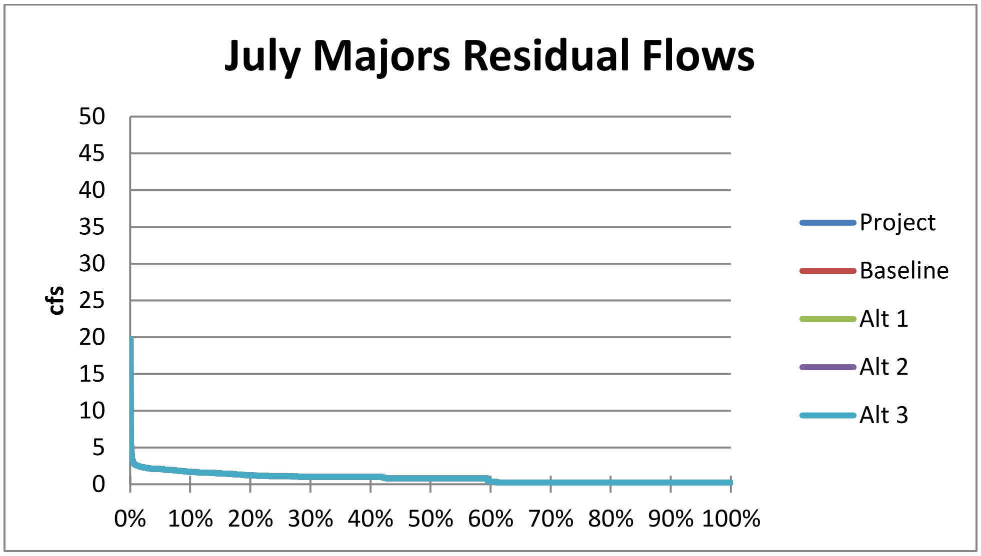



| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 3 | 3 | 3 | 3 | 3 |
| **20%** | 2 | 2 | 2 | 2 | 2 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 0 | 0 | 0 | 0 | 0 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
| **100%** | 0 | 0 | 0 | 0 | 0 |




| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 2 | 2 | 2 | 2 | 2 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 0 | 0 | 0 | 0 | 0 |
| **70%** | 0 | 0 | 0 | 0 | 0 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
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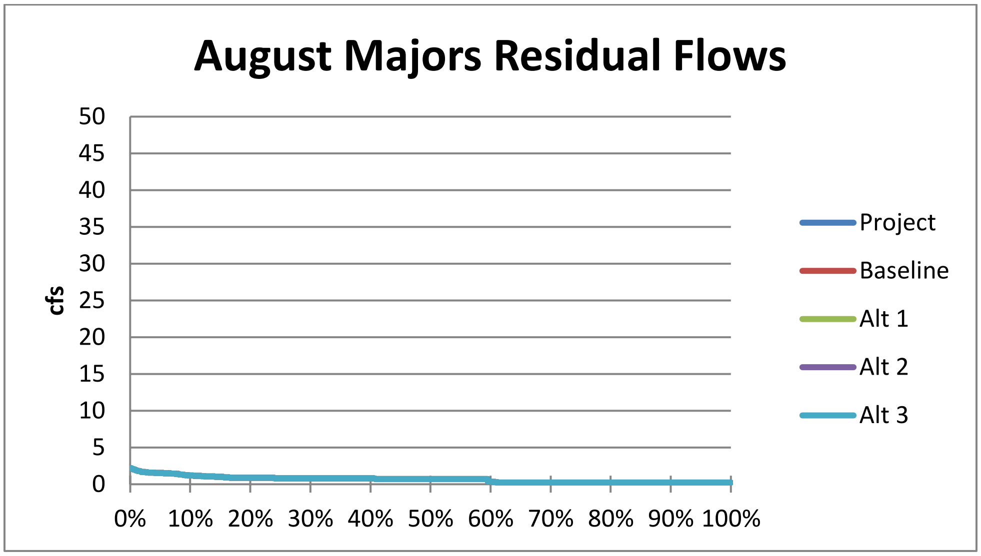


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 1 | 1 | 1 | 1 | 1 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 0 | 0 | 0 | 0 | 0 |
| **70%** | 0 | 0 | 0 | 0 | 0 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
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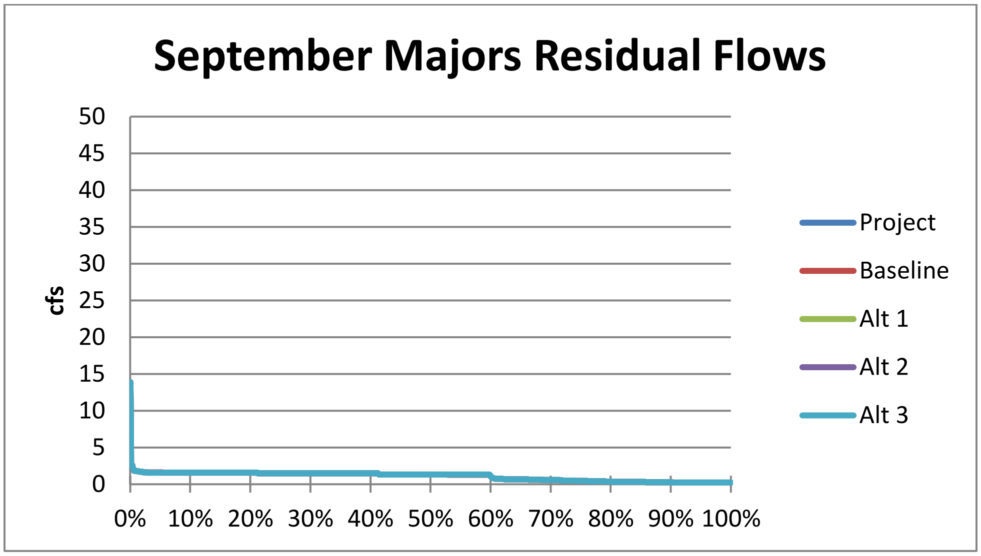


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| **10%** | 1 | 1 | 1 | 1 | 1 |
| **20%** | 1 | 1 | 1 | 1 | 1 |
| **30%** | 1 | 1 | 1 | 1 | 1 |
| **40%** | 1 | 1 | 1 | 1 | 1 |
| **50%** | 1 | 1 | 1 | 1 | 1 |
| **60%** | 1 | 1 | 1 | 1 | 1 |
| **70%** | 0 | 0 | 0 | 0 | 0 |
| **80%** | 0 | 0 | 0 | 0 | 0 |
| **90%** | 0 | 0 | 0 | 0 | 0 |
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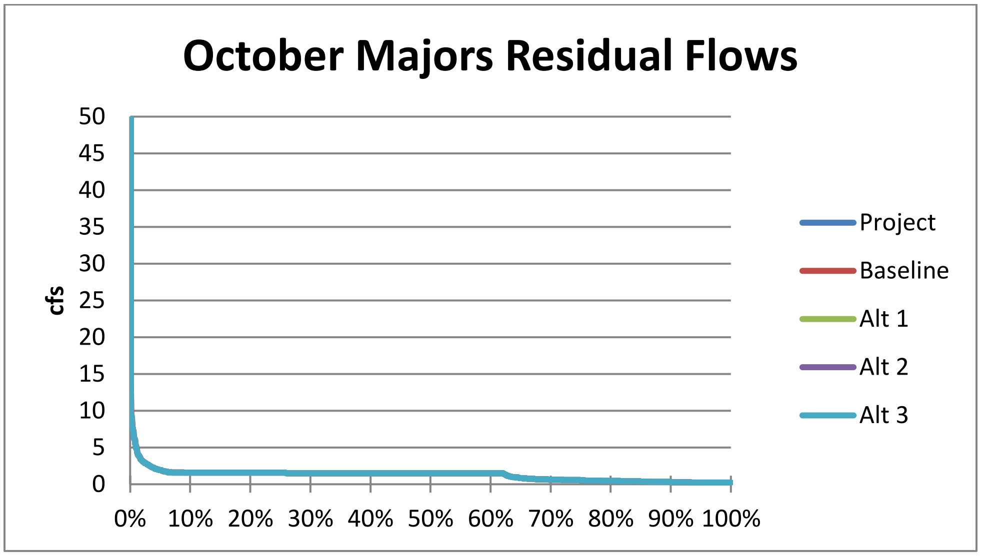


| Percentile | Project | Baseline | Alt 1 | Alt 2 | Alt 3 |
|---|---|---|---|---|---|
| 10% | 1 | 1 | 1 | 1 | 1 |
| 20% | 1 | 1 | 1 | 1 | 1 |
| 30% | 1 | 1 | 1 | 1 | 1 |
| 40% | 1 | 1 | 1 | 1 | 1 |
| 50% | 1 | 1 | 1 | 1 | 1 |
| 60% | 1 | 1 | 1 | 1 | 1 |
| 70% | 0 | 0 | 0 | 0 | 0 |
| 80% | 0 | 0 | 0 | 0 | 0 |
| 90% | 0 | 0 | 0 | 0 | 0 |
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## 1. Purpose

This document provides a description of the methodology and results of habitat modeling conducted to evaluate the effects of the Santa Cruz Water Rights Project (Proposed Project) on habitat for Central California Coast steelhead (steelhead) (*Oncorhynchus mykiss*) and Central California Coast coho salmon (coho) (*Oncorhynchus kisutch*) due to changes in streamflows.

## 2. Introduction and Background

Operation of diversions for the City's water system involves potential effects on salmonid populations inhabiting the streams that also serve as the City's water supply sources. Evaluation of effects on salmonid populations in the EIR for the Proposed Project relies on information, tools, and methods developed to determine and evaluate instream flow requirements under the City's pending Anadromous Salmonid Habitat Conservation Plan (ASHCP) (City of Santa Cruz 2021). The objective of this work has been to provide a means of linking streamflow to habitat values for steelhead and coho inhabiting stream reaches influenced by City water supply operations. The methodology is based on the 79-year daily streamflow database developed by Balance Hydrologics (see Appendix D-1) and uses modeled daily residual streamflows,[1] that are output from the Confluence model (see Appendix D-2). The information, tools, and methods were developed as a collaborative process involving the City and its consultants, representatives of the National Marine Fisheries Service, and representatives of the California Department of Fish and Wildlife over a multi-year period beginning in 2005 as part of the development of the pending ASHCP.

The City operates three diversions from North Coast streams (Liddell Spring, Laguna Creek/Reggiardo Creek, and Majors Creek), diversions from the San Lorenzo River at the Felton Diversion and the Tait Diversion, and diversion from Newell Creek at Loch Lomond Reservoir.[2] Only the Felton Diversion (CDFW 1998) and Newell water rights have required bypass flows currently. A major objective of developing the ASHCP has been to identify opportunities to minimize the effect of the City's diversions on steelhead and coho by managing diversion operations to meet in-stream flow levels to support salmonid habitat in coordination with City water supply functions. Toward this end, the City has negotiated long-term minimum bypass flow requirements (Agreed Flows) with CDFW and NMFS as part of the ASHCP process. As both the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS) have tentatively agreed on the bypass flow requirements, the City has committed to implement the Agreed Flows as part of the Proposed Project regardless of the final outcome of the ASHCP process. The Agreed Flows are described in Chapter 3 and Appendix C of the EIR and are the minimum bypass flows for the Proposed Project and Alternatives 1 through 3.

[1] Residual streamflow is the amount of streamflow left in the stream after diversion, assuming diversion is possible after the applicable minimum bypass flows are met. Residual streamflow may be different than the applicable minimum bypass flows if there is more flow in the stream than needed by the diversion or if flow is less than the agreed bypass with no diversion.

[2] The name of the dam that impounds Newell Creek, forming Loch Lomond Reservoir, is Newell Creek Dam.

# 3. Methodology

## 3.1. Analytical Tools

There are many components of an aquatic system that potentially influence the suitability of habitat for each life stage of steelhead and coho. During the freshwater portion of their life history, these species are dependent on flowing waters and they are uniquely adapted to the Mediterranean seasonal hydrologic pattern and dynamic annual precipitation variability influencing streams flowing from the Central California coast. The major factor linking the City's water supply activity and the suitability of habitat for salmonids is alteration of the magnitude and timing of instream flows. Therefore, development and evaluation of bypass flows focused on physical habitat parameters related to flows and was supported by existing analytical tools including the Physical Habitat Simulation Model (PHABSIM) component of the Instream Flow Incremental Methodology (Bovee et al. 1998, see following Section 3.1.1), the Critical Riffle or Thompson Method (Bjornn and Reiser 1991; Thompson 1972; CDFW 2013), the Powers and Orsborn method (Powers and Orsborn 1985), and R2 (Berry 2016). These methods are summarized below and described in more detail in HES (2014).

Habitat conditions for steelhead and coho are also influenced by water temperature. As described further in Section 3.15, effects of the Proposed Project and alternatives on water temperature are limited to operation of Loch Lomond Reservoir. Modeling of water temperature was not conducted but City records for reservoir water temperature profiles and reservoir spill were evaluated to assess potential effects. Additionally, to evaluate the potential for water temperature effects, modeling results for the Baseline, Proposed Project and alternatives were reviewed to assess potential changes in Loch Lomond Reservoir spill under each of these scenarios. Loch Lomond Reservoir spill data are provided for the Baseline, Proposed Project and alternatives in Chapter 8, Alternatives of the Draft EIR.

Other habitat components such as benthic macro-invertebrate food sources, substrate characteristics, channel features, riparian vegetation, human disturbance, predation, disease, etc. are potentially important but were not incorporated directly in the analytic structure because either there is not an apparent, quantifiable direct linkage between the Proposed Project and a given habitat component, or there is not sufficient knowledge to evaluate or quantify linkages. Other components are considered qualitatively based on expert judgment in relation to the Proposed Project.

### 3.1.1. Analysis of Spawning and Rearing Habitat Using PHABSIM

The PHABSIM method assesses habitat conditions by measuring hydraulic conditions at representative cross sections and constructing computer models to predict changes in suitability of habitat with discharge. The model output includes an index representing habitat suitability based on depth and velocity conditions. For spawning, the suitability index also incorporates substrate size characteristics. The PHABSIM analysis was conducted in 2005 through 2010 by Hagar Environmental Science (HES) in coordination with a technical team representing CDFW, NMFS, and the City.

PHABSIM study sites were selected by walking the stream and identifying locations where conditions were generally favorable for either spawning or rearing of steelhead or coho. Spawning transects were generally near the transition areas between a pool-tail and the head of a riffle where substrate and velocity conditions favor spawning. Some transects were also placed in run type habitat or in deeper riffles where suitable substrate occurred. Rearing transects were located in pool, flatwater, or deeper riffle habitat roughly in proportion to the abundance of each type. Habitat type composition was based on information in ENTRIX (2004) for North Coast Streams; HES (2007) for Newell Creek; and a 2005 HES survey of the Lower San Lorenzo River (HES 2014). Sites were selected to cover the range of variability in factors such as stream width, cross-section depth, and substrate conditions. Sites were located close to access wherever possible. One or more transects were marked perpendicular to the flow at each site to cover the range of conditions at individual sites.

*Data Collection and Pre-processing*

The PHABSIM study required collection of channel geometry and hydraulic data including an elevation profile, depth and velocity cross-sections, and water surface elevation (stage) at each study site across a range of flows that bracketed the suitable range for a given life-stage. Cross-sections were selected and initial surveys were conducted during low-flow conditions since channel features and substrate conditions are more easily observed at that time. Initial transect data collection included an elevation cross-section (channel geometry) and substrate code for stations at intervals sufficient to describe the habitat and provide a maximum number of data points for hydraulic modeling. Substrate particle size classes and relative abundance were characterized at each measurement point on the transect using the Bovee substrate coding system (Bovee 1978). Water stage data were collected at each cross-section to serve as the low-flow point for stage/discharge relationships. One transect in each study area was selected for flow estimation and a depth and velocity set was collected for this purpose. The flow transect was usually one of the passage or spawning transects since they were generally placed in more suitable locations for flow measurement. Flow measurements were supplemental to the City's 15-minute gage data for each stream (HES 2014).

Subsequent data collection required collection of a high flow velocity set (velocity at each station) at the upper end of the model range of flows and a series of stage/discharge measurements over the range of flows to be modeled. These data were collected during storm runoff periods (HES 2014).

Stage measurements were correlated with flow to develop a stage/discharge relationship for each transect location. Flow corresponding to each stage measurement was estimated using either the City gage data, site measured flow, or a correlation of site measured flow with City gage data (HES 2014).

*Hydraulic Model Development and Calibration*

The data collected were used to develop a hydraulic simulation under the PHABSIM framework which was used to simulate depths and velocities in streams under varying stream flow conditions. Simulated depth and velocity data were then used to calculate the physical habitat index, either with or without substrate information. First, water surface elevations were predicted for each transect using the IFG-4 component of the PHABSIM model. The IFG-4 method uses an empirical log/log regression formula of stage and discharge (flow) based on the measured data to determine water surface elevations across a series of simulation flows. Each cross section was treated independently of all others in the data set. A minimum of three stage-discharge measurement pairs were used to calibrate the stage-discharge relationship.

Water velocities were calculated using the "one-flow" technique which uses a single set of measured velocities and depths to estimate the Manning's n value on an individual cell basis along a transect. The high flow velocity and depth data were used for this purpose whenever possible so that measured values were available for the maximum number of cells on each transect. At the simulated discharges, the model uses Manning's formula and these previously derived Manning's n values together with the projected depth to predict velocities. A velocity calibration was performed to determine the adequacy of velocity simulations and adjustments were made where needed and justified (HES 2014).

*Habitat Suitability Criteria*

Hydraulic parameters (depth and velocity) and substrate values are linked to habitat value through application of habitat suitability criteria (HSC) that describe the relative suitability of water depth, water velocity, and stream substrate, to the fish species being evaluated. For the ASHCP, existing HSC data developed on the Trinity River by the U.S. Fish and Wildlife Service were used (Hampton 1997). The Trinity River HSC were used because they were considered the best quality criteria available within a reasonable geographic distance from the North Coast streams, the San Lorenzo River, and Newell Creek. The Trinity River HSC were developed by direct observation and measurement of depth and velocity at locations used by spawning steelhead and coho and rearing juveniles. Suitability criteria for spawning substrates were taken from Bovee (1978) due to a lack of data from Hampton (1997).

*Habitat Index Simulation*

Habitat index simulation is the process that combines hydraulic estimates of velocity and depth (i.e., the results of the hydraulic simulation) with the suitability values for those attributes (i.e., the habitat suitability criteria) to weight the area of each cell along a transect at the simulated flow. The weighted values for all cells are summed to give a single habitat index, called weighted usable area or relative suitability index (WUA/RSI). The WUA/RSI index of aquatic habitat suitability describes the incremental relationship between physical habitat and stream discharge. Hydraulic and habitat index modeling were conducted using RHABSIM Version 3.0 (Riverine Habitat Simulation, Payne 1994).

### 3.1.2. Analysis of Flows for Migration Passage Using Critical Riffle Analysis

This method identifies sites that are exceptionally wide and shallow (critical riffles) as limiting to fish migration and establishes the level of flow that meets minimum migration criteria for depth of flow at these sites (HES 2014). The migration passage flow assessment is based on standards developed in the fisheries literature (Thompson 1972; Bjornn and Reiser 1991; CDFW 2013). These standards assume that there must be sufficient depth over the shallowest riffles for the target species to swim upstream with its body completely covered.

The critical riffle analysis was conducted from 2005 through 2010 and used a methodology attributed to Thompson (1972). Thompson's method entails identifying a series of shallow riffles that potentially affect fish passage, establishing transects across the shallowest locations, and then determining, for each transect, the flow at which a minimum depth criterion is maintained across at least 25% of the total channel width and a contiguous minimum width of 10% of the channel. Thompson (1972) recommends a minimum passage depth criterion of 0.6 feet for adult steelhead, although other depth criteria have been used depending on specific site conditions and objectives. This basic methodology has been widely adapted and modified since its introduction as a proposed method in 1972.

In this analysis, the Technical Team (NMFS, CDFW, City of Santa Cruz and consultants) agreed on minimum passage depth criteria (critical depths) of 0.6 feet for migrating adults and 0.3 feet for smolts. Factors to consider in choosing a depth or width criteria are the number, length, and difficulty of critical passage points; distance from the ocean; and size and condition of the fish. In each of the study streams where the critical riffle analysis was used, the reach between the mouth and the upper limit of the anadromous reach is quite short (from 0.7 to 1.6 miles) and generally has low gradient. Riffles make up a relatively small portion of the habitat in each stream (ENTRIX 2004; HES 2007) and other obstructions are infrequent. The riffles are relatively short and interspersed with pools with good cover characteristics, including undercut banks and roots. Therefore, migrating adults should be in good condition at each of the critical passage locations and fatigue from having to pass many obstacles over great distances should not be an issue. Given swimming speeds cited previously, high velocity was not a factor at any of the identified passage sites.

*Site Selection and Field Data Collection*

Three to four critical riffles were identified during an initial walk-through of the anadromous reach of each of the North Coast streams during the fall of 2006. Critical passage locations in the San Lorenzo River downstream of the Tait Diversion were identified during a habitat survey conducted in October 2005 and critical passage locations were identified in Newell Creek downstream of Newell Creek Dam/Loch Lomond Reservoir during the fall of 2007 and during the winter of 2009-2010 (HES 2014). A single transect was placed along the shallowest cross-section of each riffle and marked with head pins for location of future measurements. Transects incorporated the shallowest portion on the probable route a migrating salmonid would follow. Streambed elevations were measured at regular intervals along a survey tape and tied to a reference elevation at each transect (one of the head pins). Water surface elevations were also measured at both sides of the channel and at the thalweg (deepest point on the cross-section), including the time of each measurement. Water surface elevation measurements were repeated at each transect under varying flow conditions during the following winter and early spring. Flow associated with water surface elevations or velocity transects was determined from site measurements or estimated from the 15-minute gage record maintained by the City in the anadromous reach of the North Coast streams and in Newell Creek below Newell Creek Dam, and the USGS gage in the San Lorenzo River at the Tait Diversion.

*Data Analysis*

Cross-section data were entered in a spreadsheet configured to allow determination of the critical water surface elevation at which depth criteria were met. Each measurement point on the cross-section represented a cell with boundaries extending halfway to both adjacent measurement points. Depth of each cell was calculated for any given water surface level as the water surface elevation minus the bed elevation. A depth criterion (i.e., 0.6 feet for adults or 0.3 feet for smolts) was set for each iteration of the spreadsheet and both the total width of cells meeting that depth criteria as well as the longest contiguous group of cells meeting the criteria were tallied and compared to the total wetted width corresponding to that stage. A stage was selected for which 25% of the wetted channel width and a contiguous portion totaling at least 10% of the wetted width had a depth equal to or greater than the criteria value. A stage/discharge relationship was estimated for each transect using the field stage measurements and discharge data. The stage/discharge relationship was used to calculate the flow required to meet critical water surface elevations at each cross-section. This was the minimum migration flow at the cross-section.

For each reach where passage was evaluated, a flow window was defined with suitable conditions for adult migration. The lower threshold was defined by the cross-section with passage criteria met at the lowest flow and the upper threshold was defined by the cross-section with the highest flow required to meet passage criteria. This is a departure from the standard method (which uses the average value of the transects) but was requested by CDFW as a buffer against potential error in the method. This provides a protected "window" for migration passage with diversion halted when the lower threshold is reached and not resumed until flows exceed the upper threshold. The amount of flow in excess of the upper threshold is available for diversion. If flow drops below the lower threshold, either spawning, rearing, or smolt migration flows would then be governing.

### 3.1.3. Analysis of Passage at Bedrock Sheets in Newell Creek Using Powers and Orsborn

Two bedrock sheets that are passage obstacles upstream of Rancho Rio Bridge in Newell Creek were more complex than the critical riffles and were assessed using methods described by Powers and Orsborn (1985). Both obstacles were analyzed as chutes, using the Powers and Orsborn terminology, since they were relatively uniform in cross-section with steep but relatively constant slope. These bedrock sheets present an obstacle to migrating salmonids due to the very shallow depth of flow and high flow velocity. Both had shallow entrances (downstream end) and negative exit slopes (the bed slope at the top of the chute is downward in the upstream direction). The shallow depth at the base of the chute precludes steelhead from jumping so, in order to pass the obstacle, they must swim up it. At each site a bed cross-section and profile were surveyed. Water surface and spot velocity measurements were made at different flow levels. Water velocity and depth were calculated for a range of flow conditions using the Manning's Equation. The Manning's Equation predicts mean velocity from wetted width, cross-sectional area, bed slope, and an empirical roughness coefficient (the Manning's coefficient). Cross-sections were also placed through the hydraulic control below each chute and a stage/discharge relationship developed at each control to determine the water surface elevation below each chute for given flows. This affects the length of the chute that must be negotiated by a migrating fish.

For each cross-section, the stage allowing passage was calculated for a range of depth criteria between 0.3 and 0.6 feet. This part of the analysis used criteria as described previously for evaluation of critical riffles (i.e., the criteria depth is achieved across 25% of the wetted channel width and at least a contiguous portion equaling 10% of the wetted channel width). Because the Manning's Equation is sensitive to the choice of roughness coefficient, minimum and maximum velocity (and corresponding flow estimates) were calculated. For this analysis we used Manning's coefficient values of 0.025 and 0.040 as minimum and maximum values consistent with smooth rock substrate.

The analysis assumes that adult steelhead require a depth of flow at least equal to their body depth in order for the fish to make full use of its propulsive power. Steelhead body depth was assumed to be between 0.4 and 0.6 feet. Steelhead are assumed to have burst speeds of 13.7 to 26.5 feet per second (fps) and coho are assumed to have burst speeds of 10.6 to 21.5 fps (Powers and Orsborn 1985). It is assumed that burst speed can be maintained for an estimated 5 to 10 seconds (Powers and Orsborn 1985). Maximum speed for passing an obstacle was assumed to be a percentage of burst speed depending on fish condition. Condition coefficients were 100% for fish fresh out of salt water or still a long way from spawning areas, 75% for fish in the river a short time and still migrating upstream (good condition), and 50% for fish in the river a long time and close to the spawning grounds (poor condition) after Powers and Orsborn (1985). The distance from the mouth of the San Lorenzo River to Newell Creek is relatively short (about 14 miles) and migrating steelhead or coho should be able to reach the barrier location within a few days of entering freshwater. Therefore, fish would be assumed to be in relatively good condition and a condition coefficient of 75% to 100% would be appropriate.

The distance a fish can swim at an obstacle is computed as:

$$LFS = ((VF*c) - VW) * TF \qquad 1)$$

where LFS is the length a fish can swim, VF is the fish swimming velocity, c is the coefficient of condition, VW is the water velocity, and TF is the time to fatigue.

For short chutes velocity may be determined by the equation:

$$V_{SC} = (2gH)^{0.5} \qquad 2)$$

where $V_{SC}$ is the velocity down a short chute, g is the acceleration due to gravity (32.2 $fps^2$), and H is the total vertical drop between two pools (Powers and Orsborn 1985).

Formulas 1 and 2 were used with the preceding assumptions to estimate the length a fish can swim and the velocity of water through the chute at a flow meeting the passage depth criteria. If the length a fish could swim is greater than the length of the chute and if the velocity is less than the fish's burst swimming speed over that distance, then the chute is passable at that flow. An upper level of flow beyond which passage is not possible can also be calculated as the flow at which LFS becomes less than the chute length.

### 3.1.4. Analysis of Passage in the San Lorenzo River downstream of the Felton Diversion Using the R2 Method

PHABSIM studies were not conducted in the San Lorenzo River between the Felton Diversion and Tait Diversion as part of the ASHCP since operation of the City's diversion was subject to a previous agreement with CDFW (CDFW 1998) and evaluation of the effects of water rights changes indicated little effect on flows (ENTRIX 2006). As development of the ASHCP progressed and as the need for facilities improvements and water rights changes to meet supply under agreed bypass flows became better developed, the ASHCP technical team identified the need for increased focus on effects of Felton operations on streamflow and instream habitat resulting from increased use of the facility. In late 2016 the ASHCP technical team decided to evaluate adult passage requirements in this reach via a desktop method utilized by CDFW (the R2 method, developed by R2 Resource Consultants) and to correlate it with other adult passage sites where physical datum is available to evaluate comparability instead of initiating new instream flow studies (Berry 2016). Further, it was agreed that adult migration is usually the life stage requiring the most flow, so other life stages would be protected as well (Berry 2016).

The R2 assessment was developed to provide an estimate of bypass flow that would be protective of anadromous salmonid spawning habitat and upstream passage in as many streams as possible based on measures of channel size expressed in terms of drainage area and mean annual flow (R2 Resource Consultants 2008). The analysis used the following formula provided by CDFW (Gray 2016).

$$Q_{fp} = 19.3\, Q_m\, D_{min}^{2.1}\, DA^{-0.72} \qquad 3)$$

where $Q_{fp}$ is the minimum fish passage flow (cfs), $Q_m$ is mean annual flow (cfs), $D_{min}$ is minimum passage depth criterion (feet), and DA is drainage area (square miles).

Results of the R2 analysis were also compared to a critical passage study in the San Lorenzo River gorge using the Powers and Orsborn methodology, surveys at other sites using the Thompson method, observations of movement of large juvenile steelhead in the San Lorenzo River, and estimates of passage flow requirements by local fishery biologists in the San Lorenzo Watershed Management Plan (Berry 2016).

### 3.1.5. Analysis of Effects of the Project on Water Temperature

Steelhead are generally expected to survive and grow well at temperatures up to about 19°C to 21°C if food is abundant. Temperatures of 19°C or less is considered optimal under most conditions (Bidgood and Berst 1969, Hokanson et al. 1977, Smith and Li 1983, Armour 1991, see also HES 2014 for a summary of these findings). Steelhead may actually grow faster at higher temperatures if food is abundant (Smith and Li 1983) but at temperatures in excess of 21°C, increased mortality may offset the benefits of increased growth rates at the population level Hokanson *et al.* 1977 (see HES 2014 for discussion of temperature suitability). Temperatures of 25°C to 26°C are generally considered lethal (Bidgood and Berst 1969, Hokanson *et al.* 1977).

The north coast streams (Liddell, Laguna, and Majors Creeks) have water temperature conditions which are relatively cool due to marine influence and relatively dense, intact riparian canopies (City of Santa Cruz 2021). Temperature monitoring data collected by the City indicate temperature conditions in these streams are within the range of tolerance for both steelhead and coho rearing juveniles and near optimal in many cases (City of Santa Cruz 2021). The City diversions on the North Coast do not create conditions that influence water temperature (i.e. large storage facilities, removal of riparian shading vegetation, or alteration of subsurface flows).

The San Lorenzo River and its tributaries extend further inland than the North Coast streams and water temperature is warmer. Water temperature is suitable for steelhead at all monitoring locations but increases with distance downstream from Newell Creek and is near the upper range of suitability during the seasonal thermal maximum period and in the lower San Lorenzo River from above Tait Street Diversion to the lagoon (City of Santa Cruz, in preparation). Coho require cooler temperature than steelhead, and temperature is relatively warm for coho except in the tributaries and upper mainstem and in Newell Creek downstream of Loch Lomond Reservoir (City of Santa Cruz, in preparation). Coho do not presently maintain viable populations in the San Lorenzo River and its tributaries where the City has its water supply operations.

The existing required release of 1 cfs from Newell Creek Dam is from the lower levels of the Loch Lomond Reservoir and is colder than ambient stream temperatures during the summer and warmer than ambient during the winter. The fish release is typically between 11°C and 14°C. As a result, temperature in Lower Newell Creek below the dam is warmer than Upper Newell Creek, above the dam, during winter and spring and cooler in the summer by up to 4°C on average (City of Santa Cruz 2021). Warmer water in winter and spring can enhance salmonid growth rates if food resources are sufficient. The cooling influence in summer may maintain temperature in a more suitable range during excessively warm conditions but may depress growth rates at other times. The effect would be strongest closest to the dam since there is equilibration with environmental conditions with distance downstream (e.g. air temperature, insolation, subsurface flows). The cooling influence in summer can extend downstream as far as the San Lorenzo River and at these times the flow from Newell Creek can reduce temperature in the main stem .by about 1°C (City of Santa Cruz 2021, HES 2014b).

Operation of the reservoir (required 1 cfs release and reservoir spill) is the only City activity associated with the Proposed Project that has the potential to influence water temperature. The effect of the 1 cfs release is generally beneficial, particularly during the late summer and during dry years, when stream temperature is highest and may limit habitat suitability for steelhead, and particularly for coho.

During periods when the reservoir spills, water from the surface of the reservoir mixes with the fish release downstream of the dam. Since spill is from the reservoir surface, it can be warmer than the fish release during the warmer parts of the year. However, the majority of spill occurs during or after precipitation events in the winter when Loch Lomond temperature is cool. The period when temperature effects are most likely is during the spring and early summer (May through July) when the lake surface is warming and there is still a potential for spill, at least in wetter years when storage is high.

Temperature monitoring data collected by the City indicate that surface water temperatures in Loch Lomond Reservoir closest to the spillway can reach levels that are potentially harmful to steelhead and coho. Sub-optimal temperatures (21°C or greater) have occurred 98% of the time in July, 85% of the time in June, 19% of the time in May, and only 1% of the time in April (Figure 1). Surface temperatures in the City monitoring data have never been recorded above 18.3°C in March. Potentially lethal levels have also been recorded (25°C or higher) in June and July, although the frequency of such occurrence is low in June (less than 1% of readings)[3]. Frequency of reservoir surface temperature of 25°C or higher in July has been observed 11% of the time. These data may slightly underestimate the frequency of temperature in the unsuitable range since it is generally recorded mid-morning while peak temperature usually occurs in the mid to late afternoon.

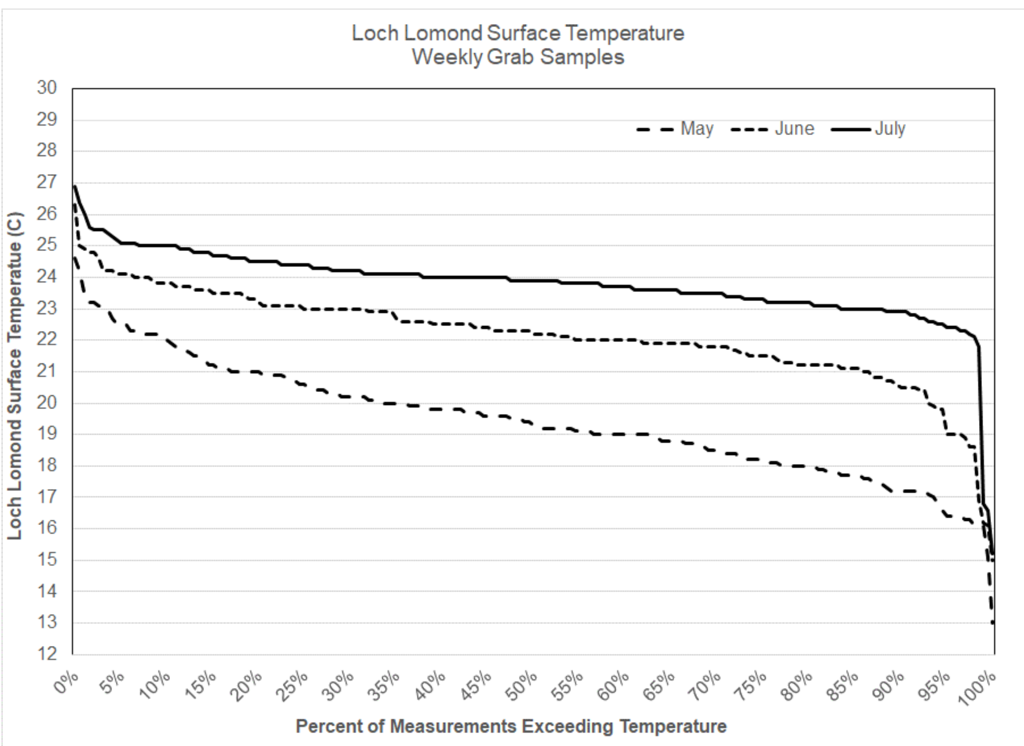



**Figure 1. Loch Lomond Surface Temperature Measured by Weekly Grab Sample from 1987 to 2020.**

[3] Data are in the form of surface grab samples measured once per week, usually mid-morning, collected since 1987.

The effect of warm reservoir spills is moderated by the frequency, volume, and timing of spill; possible additional warming (during the day) or cooling (at night) as water flows down the spillway; and mixing with the cooler water from the fish release below the dam. Data collected by the City were evaluated to better understand the potential and magnitude of this effect. At times when the spill is warmest later in the spring, the amount of spill tends to be declining under both the Baseline and the Proposed Project and it is diluted to a greater degree by the colder fish release. Daily spill volumes estimated by the Confluence model for the Proposed Project using the historical hydrological record (1937-2015) indicate that spill would occur about 58% of the time in May, 27% of the time in June, and 3% of the time in July (Figure 2). Maximum spill amounts would be 77 cfs in May, 19 cfs in June, and 2.5 cfs in July. The model results predict two days in August during the entire record when spill would occur and a maximum spill of 0.20 cfs. No spill was predicted to occur in September, or October. The highest spill amount for May is a result of data from 1983, which was a very wet year, the second wettest in the hydrologic record. The reservoir was spilling continuously from mid-November 1982 and storms in late April resulted in increased spill through early May of up to 77 cfs. Spill declined to 15 cfs by mid-May and continued dropping until it ceased on August 2. It is likely that reservoir temperature was moderated during this period by cool air temperature and overcast conditions typical during storm passage. Late season storms, such as occurred in 1957, 1996, 1998, 1995, and 1941, were responsible for the majority of high spill events in May that are evident in the Confluence model results. Similar to the 1983 data, these events are likely associated with relatively cool reservoir temperatures. Absent late season storms in May, spill amount is rarely in excess of 16 cfs.

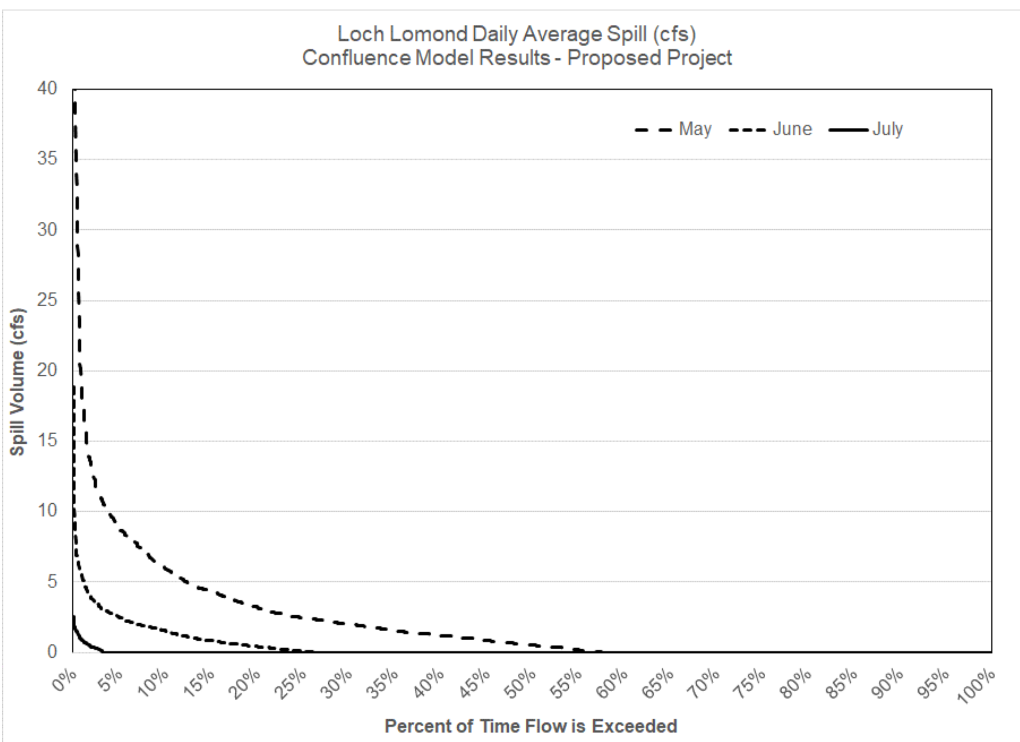



**Figure 2. Loch Lomond Daily Average Spill from Confluence Model Results for the Proposed Project.**

The effect of warm spill from the reservoir is offset by cold water released through the fish release. In May, the warmest surface temperature in the City database is 24.6°C. If 16 cfs is flowing over the spillway at that temperature, a simple mass/energy balance would predict that the resulting flow in Newell Creek downstream of the spillway would be 23.9°C after mixing with a flow of 1 cfs from the fish release at 12°C. Increasing the fish release to 6.5 cfs would result in a temperature of 21°C. An upgrade to the Newell Creek Dam outlet structure, currently under construction, will allow for significantly higher releases. During June, the Confluence model predicts much lower spill levels. The highest spill amount for June was modeled at 19 cfs but this was the result of a late season storm in the historic hydrologic record for 2011 representing a single day of the record. In all other model years, predicted spill in June was 10 cfs or less and only exceeded 5 cfs about 1% of the time. The amount of cold release to cool this level of spill to 21°C or less (~3 cfs), is well within the capacity of the fish release, even at the maximum observed June reservoir surface temperature of 26.3°C. For July, the maximum spill in the model results is 2.5 cfs but the maximum temperature in the City monitoring data is 26.9°C. Under these conditions a flow of 2 cfs through the fish release at 12°C would be sufficient to lower the resulting temperature to less than 21°C.

Limited temperature data available in Newell Creek downstream of the dam suggests that the effect of the spill on water temperature below the dam can be substantial but appears not to exceed suitable levels for rearing steelhead or coho under the Baseline. During 2019, the reservoir was spilling for most of the period from early February through late June. Maximum water temperature recorded below the dam[4] in April was 20.3°C when the reservoir was spilling at approximately 5 cfs or less. The average daily temperature below the dam, however, was never higher than 18.1°C in April. The reservoir was spilling at no more than 2 cfs in June 2019 and maximum recorded water temperature downstream reached 19.1°C. Average daily temperatures were below 17°C during June and declined to less than 12°C by the time spill ceased near the end of the month.

Temperature increases due to spill are likely to influence temperature conditions in the San Lorenzo River downstream of Newell Creek. There is a limited amount of temperature data for the San Lorenzo River at the Newell Creek confluence (Figure 3). These data indicate that water temperature approaches 20°C during peak summer warming and that Newell Creek appears to have a slight cooling influence during the summer (1°C or less) and a very slight warming influence in winter. The only datapoint potentially influenced by spill is May 9, 2019. Streamgage and reservoir elevation data indicate that the reservoir was spilling at a low volume (1 cfs or less) and temperature data records for Newell Creek below the dam show a value of 14 to 14.1°C bracketing the time temperatures were recorded in the San Lorenzo River. This is consistent with the observation of 13.3°C upstream of the Newell/San Lorenzo confluence and 13.5°C downstream of the confluence. Maintaining water temperature of 21°C or less below Newell Creek dam during periods of spill should also minimize any thermal effects in the San Lorenzo River.

Increased frequency of spill in April and May with associated warmer temperatures may actually be beneficial for rearing steelhead (and coho if present) as long as the temperature is still within the suitable range. Salmonids grow faster at warmer temperatures within the suitable range with adequate food supply. Increased spill in June may also be beneficial as long as it does not result in temperature above the suitable level.

[4] Temperature, reflecting both the fish release and reservoir spill, is continuously recorded by the City at the stream gage downstream of the dam at a 15-minute recording interval. Data has been collected since July 2017.

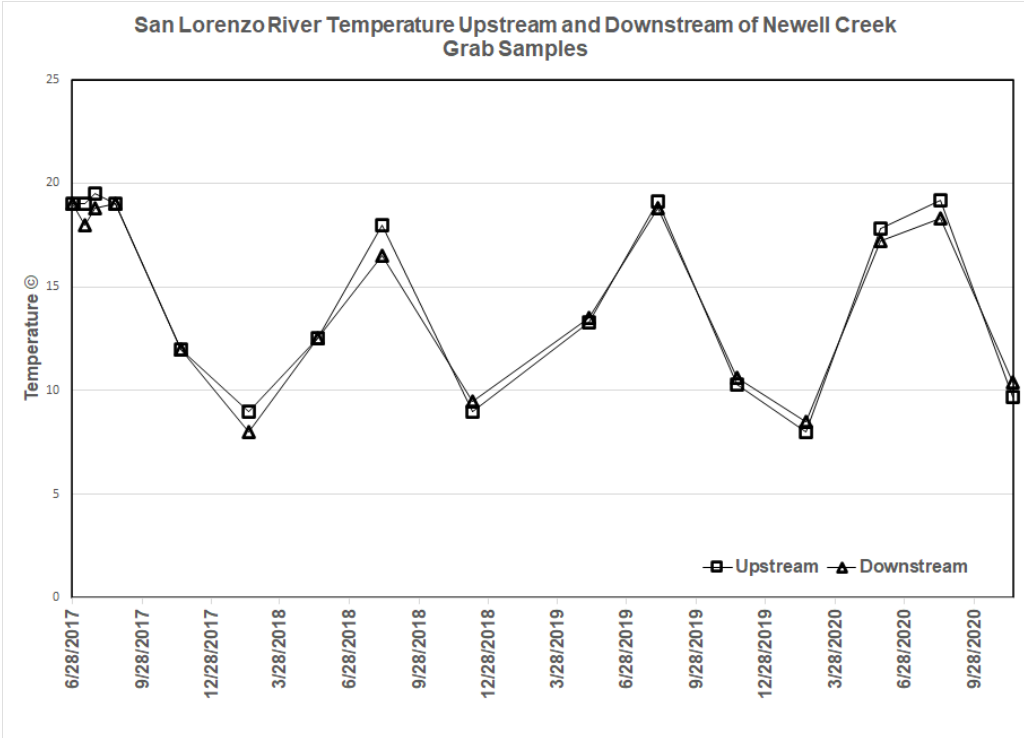



**Figure 3. San Lorenzo River Temperature Upstream and Downstream of Newell Creek, 2017-2020.**

### 3.2. Analytical Framework, Model Structure, and Biological Parameters

The methodology takes its structure from the salmonid life cycle and is focused on quantifiable relationships between important aspects of the life cycle that are influenced by streamflow. The habitat models address the effect of flow modification on four key life-history elements: migration of adults from river mouth to upstream spawning areas; deposition and incubation of eggs in the streambed; rearing of juveniles to smolt stage; and downstream migration of smolts to the stream mouth. These elements were selected because they represent key aspects of the species' life history that are potentially influenced by alteration of streamflows by the City. The development of models for each of these four key elements is summarized below and is more fully described in HES (2014).

*Adult Migration*

The relationship between flow and passage criteria (depth) was evaluated in the stream reaches below five of the City diversions (Liddell, Laguna, Majors, Tait Diversion, and Newell Creek downstream of Newell Creek Dam) by application of the results of the critical riffle analysis. Thresholds for adult migration passage are presented in Table 1.

A different method was used to evaluate adult migration through the San Lorenzo River between the Felton Diversion and the Tait Diversion. As described previously, adult passage requirements in this reach were analyzed using a desktop method provided by CDFW (R2) and correlation with other adult passage sites where physical data were available. This method generates a single value for minimum flow meeting migration requirements downstream of the Felton Diversion (Table 1).

**Table 1: Parameter values (flow in cfs) and timing used in effects analysis.**

| Location | Adult Migration Threshold (Min-Max Flow in cfs) | Spawning | Incubation (Minimum Flow in cfs) | Rearing | Smolt Migration Threshold (Minimum Flow in cfs) |
|---|---|---|---|---|---|
| | Timing | | | | |
| | Dec-Mar/Apr | Dec-May | Jan-May | All | Jan-May |
| Laguna Creek | 10.6-15.5 | Fig. 1a | 4.0 | Fig. 2a | 3.8 |
| Liddell Creek | 4.9-11.3 | Fig. 1b | 2.0 | Fig. 2b | 2.0 |
| Majors Creek | 9.0-16.0 | Fig. 1c | 2.9 | Fig. 2c | 3.4 |
| San Lorenzo R. @ Tait | 17.0-25.2 | NA[3] | NA[5] | Fig. 2d | 10.0 |
| San Lorenzo R.@ Felton | 40.0 | Fig. 1d | 20.0 | Fig. 2e | 20.0 |
| Newell Creek | 11.4-24.4 | Fig. 1e | 1.0 | Fig. 2f | 8.3 |

*Spawning and Incubation*

The relationship between flow and spawning habitat quality was assessed in the anadromous reaches of study streams by collecting data to calibrate a PHABSIM model. Salmonid spawning habitat is well-modeled with PHABSIM since salmonids have quite specific preferences for type of substrate, water depth, and flow velocity and tend to select locations that have hydraulic features that are relatively easy to model. Spawning habitat value is expressed in units of WUA per unit length of stream which accounts for both the areal extent and suitability of habitat. The analysis generates a curve of WUA vs. discharge (flow) that, in general, has zero value at low levels of discharge, rises to an optimum level at some intermediate flow, and decreases at higher flows (Figure 4).

*Juvenile Rearing*

The relationship between flow and rearing habitat quality was described in study streams through application of the PHABSIM model. Diversions throughout the year have the potential to alter habitat conditions for rearing salmonids in the study streams. The suitability of rearing habitat, as with spawning habitat, is expressed as WUA per unit length of stream (Figure 5). Curves of rearing WUA vs. discharge in this application of the model were more variable than the spawning curves. For steelhead the curves show an increase in habitat suitability from low values at lower flows, an increase to higher levels as flows increase and a gradual flattening of the curve (Figure 5). For coho the curves are relatively flat with higher values at minimum flows than steelhead, a low peak at lower discharge than steelhead, and a gradual decline at higher discharge levels.

[5] No spawning occurs in this reach.

*Smolt migration*

Diversion during the spring, particularly during April and May, may potentially reduce passage opportunities for steelhead and coho smolts at critical passage locations in the anadromous reaches of streams. The relationship between flow and passage criteria (depth) was evaluated in the anadromous reaches of study streams by application of the critical riffle analysis using the same sites, channel data, and hydraulic data as for adult passage; only the depth criteria were altered for evaluation of smolt passage. Thresholds for smolt migration determined by this method are shown in Table 1.

*Use of Habitat Models to Evaluate Project Alternatives*

Evaluation of project alternatives involves linkage of the hydrologic database, the Confluence operations model, and a suite of habitat models. Using a schedule of bypass flows developed in the ASHCP process that are considered protective of anadromous salmonids (the Agreed Flows) (see Chapter 3 and Appendix C of the EIR for the Proposed Project), the hydrologic record is conditioned by reserving the Agreed Flows and calculating the amount of flow available for diversion on a daily basis (the *available flows*). The Confluence model then uses the *available flows* as input to determine daily diversions from each source (see Appendix D-2). Depending on supply needs, the Confluence model may divert the entire amount or some portion of the *available flows*. The Confluence model output includes the amount of flow left in the stream after diversion for City supply. These are the *residual flows*. The *residual flow* is either the Agreed Flow for that time period, the Agreed Flow plus whatever amount is not needed for City supply, or the natural streamflow if the *available flow* is zero and diversion is precluded. The habitat models use the residual flows rather than the Agreed Flow as the basis for effects analysis since this is what would actually be in the stream and often reflects flows that are in excess of City supply needs, particularly during winter high flow periods and during wetter years.

The habitat models are constructed as linked spreadsheets for each of the six diversion points. Each spreadsheet takes input as daily time-series for up to six flow scenarios. Flow scenarios are the residual flows output from the Confluence model (see Appendix D-2). Each flow scenario has a series of habitat values calculated for each relevant life-stage in each reach. Daily values of migration potential for adults or smolts are calculated based on parameter values in Table 1 as a binary parameter (1 for suitable or 0 for not suitable). WUA for spawning and/or rearing are calculated on a daily timestep with reference to WUA vs. discharge curves (Figures 4 and 5). Figure 4 shows how spawning habitat changes with flow in each of the stream reaches affected by City diversions. As flow (discharge, x-axis) increases, habitat value for spawning (WUA, y-axis) increases rapidly from very low levels at zero flow to a peak and then declines more gradually at higher flows. For example, in Laguna Creek the spawning habitat index peaks at a flow of about 16 cfs for steelhead and about 12 cfs for coho (Figure 4a). Figure 5 shows how rearing habitat changes with flow. In general, the rearing habitat index for steelhead increases from low levels at zero flow and then increases more slowly, remains constant, or declines slightly at higher flows, depending on the stream reach. For coho, the rearing habitat index is higher at zero flow[6], reaches a peak at relatively low flows and declines at higher flows (Figures 5a and 5f). The daily flow from the Confluence model output of residual flows at each diversion point determines the habitat index value for each life stage. The habitat index may be either the WUA value for spawning or rearing or the number of days with suitable conditions for migration of adult or smolt life stages. Index values for each flow scenario are summarized (averages or counts) and tabulated and graphed.

[6] Juvenile coho prefer lower velocities such as occur in pools. Suitable habitat can occur in residual pools with little or no surface flow.

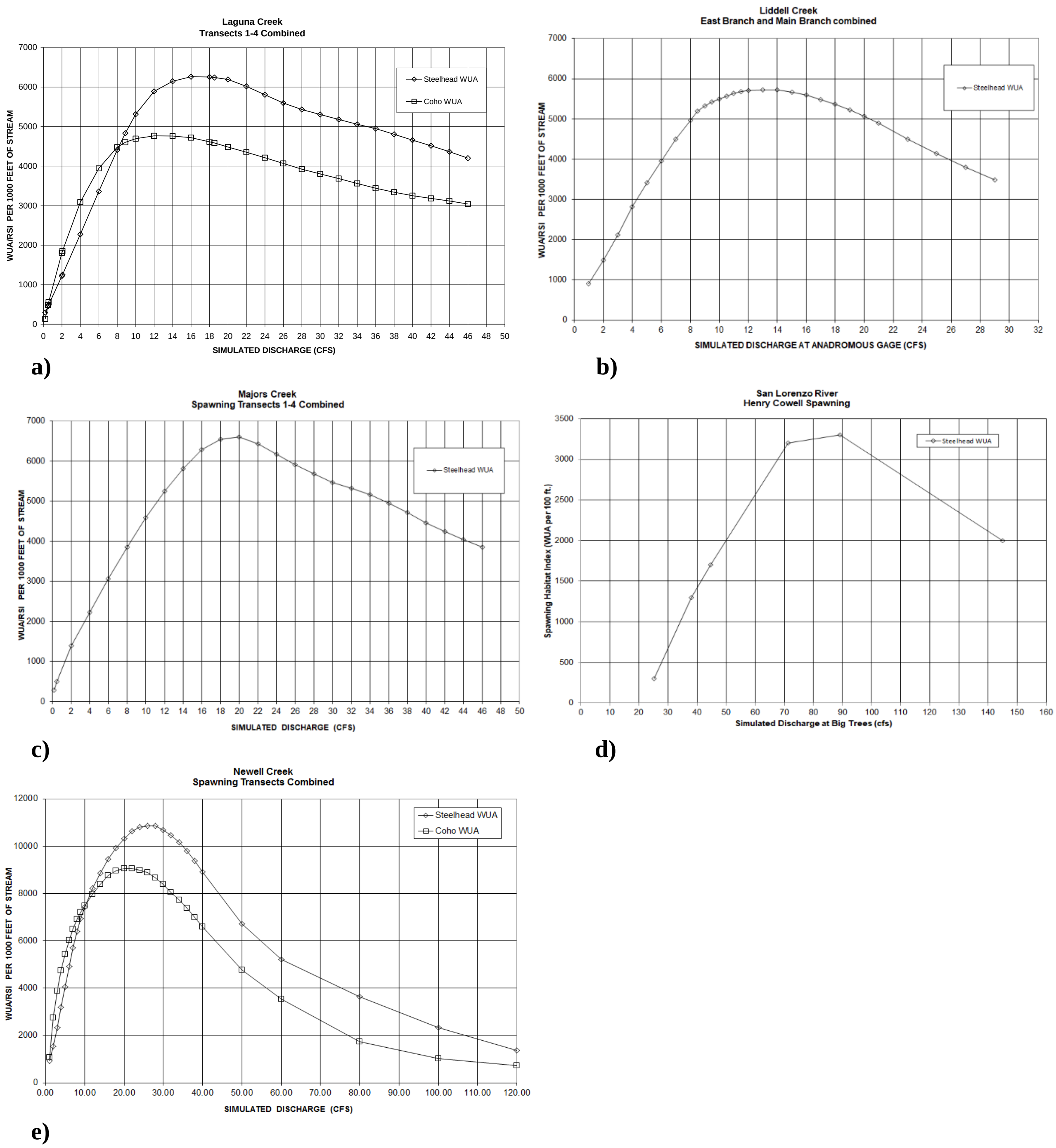



**Figure 4. Spawning Habitat Suitability vs. Flow Functions for Steelhead and Coho Used in Effects Analyses**

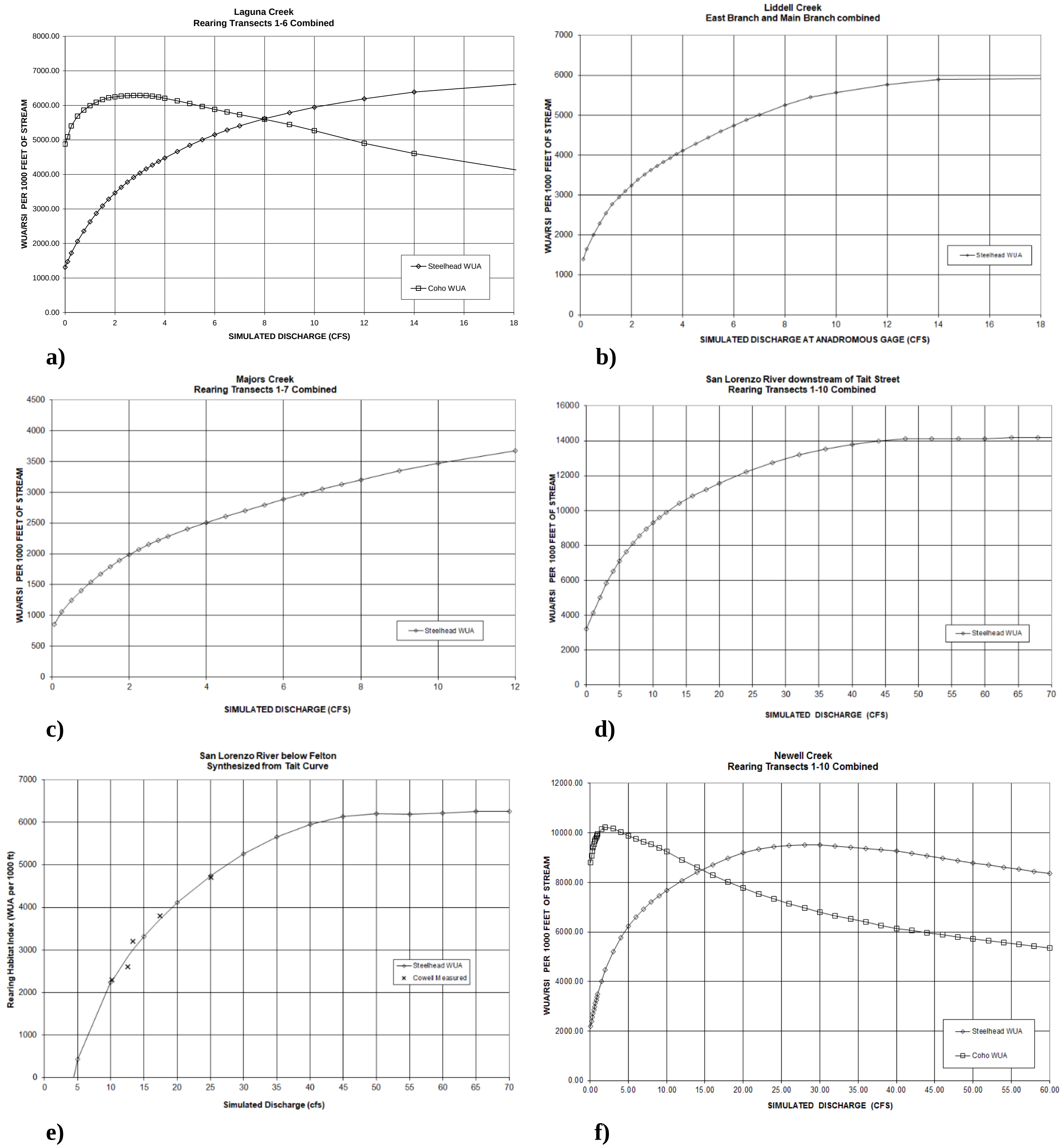



**Figure 5. Rearing Habitat Suitability vs. Flow Functions for Steelhead and Coho used in Effects Analyses**

## 4. Scenarios and Summary of Model Results

### 4.1. Scenarios Evaluated

The following scenarios have been examined:

- **Baseline:** Conditions at the time the City released the Notice of Preparation (NOP) for the EIR (2018). The minimum bypass flows for the Baseline reflect the 2018 interim bypass flow requirements[7].
- **Proposed Project:** All water rights modifications, including addition of Agreed Flows as the minimum bypass flows, and water supply augmentation components of the Proposed Project.
- **Alternative 1:** Agreed Flows only without other Proposed Project components.
- **Alternative 2:** Agreed Flows with all Proposed Project components except there is no place of use expansion, which means that there are no water transfers to neighboring agencies, and that aquifer storage and recovery (ASR) is possible only within the areas served by the City.
- **Alternative 3:** Agreed Flows with all Proposed Project components except ASR.

These scenarios are described in the Overview of Appendix D and are evaluated in the following sections. Each scenario was evaluated with historical hydrology. The Proposed Project was also evaluated with climate change hydrology, based on the CMIP-5 MOD climate model (see Appendix D-1). The HCP Base Hydrology developed by Balance Hydrologics uses a combination of measured and modeled mean daily streamflows to represent historical hydrologic conditions of the region from 1936-2015, as referenced above. The results for the historical hydrology are presented by water year type with individual model years assigned to year types based on total annual flow in the San Lorenzo River at Big Trees (see Appendix C).

### 4.2. CEQA Standards of Significance

Model results for each scenario are presented in the following sections together with identification of significant effects. The standards of significance used to evaluate the impacts of the Proposed Project related to fisheries are based on Appendix G of the CEQA Guidelines, as listed below. A significant impact would occur if the Proposed Project would:

[7] The interim bypass flow requirements are those flow requirements agreed to by CDFW and the City as part of an April 2018 agreement between CDFW and the City (see Appendix C). The City and CDFW have had numerous such agreements since 2007 during development of the ASHCP.

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

Additionally, CEQA sets forth mandatory findings of significance related to degradation of biological resources. Therefore, a significant impact to biological resources related to these mandatory findings would occur if the Proposed Project would:

g) Substantially reduce the habitat of a fish or wildlife species.

h) Cause a fish or wildlife population to drop below self-sustaining levels.

i) Threaten to eliminate a plant or animal community, or

j) Substantially reduce the number or restrict the range of a rare or endangered plant or animal.

The standards that apply to fisheries impacts of the Proposed Project related to project operations are standards of significance (a), (d), (g), (h), (i), and (j), which are the focus of the impact analysis included herein. Other standards of significance are evaluated in the EIR.

### 4.3. Baseline

The Baseline represents City water supply operations and environmental bypass flows that were in place at the time the City issued the Notice of Preparation (NOP) for the EIR in 2018. Bypass flows under the Baseline were defined by the interim bypass flow agreement between the City and CDFW (see Appendix C). The Proposed Project and each alternative are evaluated relative to the Baseline.

### 4.4. Proposed Project

The modeling for the Proposed Project includes implementation of the Agreed Flows and other water rights changes, all infrastructure components of the Proposed Project ( i.e., ASR, water transfers and associated intertie improvements, and diversion improvements), and other planned infrastructure upgrades that are not part of the Proposed Project but would be a component of the future conditions that would exist with the Proposed Project (see Appendix D Overview). The Agreed Flows included in the Proposed Project were defined by the flows agreed to by the City, NMFS, and CDFW, as reflected in the City's pending ASHCP (see Appendix C). With respect to changes in habitat for anadromous species, the major difference between the Proposed Project and Baseline is the addition of adult migration flows in April and spawning flows in December in the North Coast streams with the Proposed Project; addition of adult migration flows in April in the San Lorenzo River below the Tait Diversion with the Proposed Project; and implementation of bypass flows for adult migration and spawning in the San Lorenzo River downstream of the Felton Diversion with the Project (Table 2). These provisions, which are not included in the interim bypass flows reflected in the Baseline, result in increases in habitat values in months with hydrologic conditions in the 0%-60% exceedance range,[8] which is generally in wetter year types, as described in Appendix C.

The Proposed Project also includes Standard Operational Practice #6 as follows:

6. At times when the Loch Lomond Reservoir is spilling during late spring and summer when surface temperatures in the reservoir are warmer and the cooler 1 cfs fish release below the dam (generally between 11°C and 14°C) may not be sufficient to maintain temperatures in Newell Creek below 21°C, which is within the suitable range for steelhead and coho, the City will release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam.

[8] The Agreed Flows are specified on a month-by-month basis as determined by the hydrologic conditions for the water year to date. This approach tailors prescribed bypasses to the extreme range of seasonal and inter-annual flow variation (as described in Appendix C). These hydrologic conditions (HC) are based on the record of cumulative daily average flow by water year (October 1 - September 30) at the Big Trees gage on the San Lorenzo River (see Appendix C). The hydrologic condition types are developed by calculating the cumulative water-year flow for each month in the record (water-years 1936-2015) and sorting from lowest to highest. This record is split into five equal parts representing a range of hydrologic conditions from driest to wettest conditions (very dry, dry, normal, wet, and very wet as HC 5, 4, 3, 2, and 1, respectively). Hydrologic condition limits by month are shown in Appendix C. Operationally, the hydrologic condition is determined each month based on the cumulative water year flow at Big Trees gage for the preceding month.

**Table 2: Comparison of Interim Bypass Flows and Agreed Flows.**

| Location/Life Stage | Interim Bypass Flows (Baseline) | Agreed Flows (Proposed Project and Alternatives) |
|---|---|---|
| ***Laguna Creek*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% hydrologic exceedance conditions (HCs) |
| | No bypass for spawning in December | Bypass required for spawning in December |
| ***Liddell Creek*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% HCs |
| | No bypass for spawning in December | Bypass for spawning required in December in 0-60% HCs |
| ***Majors Creek*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% HCs |
| | No bypass for spawning in December | Bypass for spawning required in December in 0-60% HCs |
| ***San Lorenzo R @ Tait*** | No required adult migration bypass in April | Adult migration bypass required in April in 0-60% HCs |
| | Reduced rearing bypass flows to 3 cfs minimum in exceptionally dry years | 8 cfs minimum bypass for rearing at all times |
| ***San Lorenzo R @ Felton*** | Minimum bypass 20 cfs Nov 1-May 31 | Minimum bypass 20 cfs Nov 1-May 31<br><br>Minimum bypass for adult migration and spawning 40 cfs Dec-Apr when flow without diversion would occur at this level<br><br>40 cfs bypass for spawning for 14 days following potential migration event |
| | 10 cfs September, 25 cfs October, No diversion July-Aug | 10 cfs September, 25 cfs October, No diversion July-Aug |
| ***Newell Creek*** | 1 cfs minimum bypass at all times | 1 cfs minimum bypass, 0.25 cfs during low Loch Lomond Reservoir storage |

#### 4.4.1. Model Results – Proposed Project

*Proposed Project with Historical Hydrology – Habitat Indices*

Table 3 provides a summary of the habitat effects of the Proposed Project for steelhead and coho life stages in each of the stream reaches influenced by City diversions, using historical hydrology. Changes in habitat indices of less than 2% are well within the inherent statistical error in the habitat models and are not considered biologically significant or "substantial" under CEQA standards of significance. Changes greater than 2% may also be biologically insignificant or not significant under CEQA Standards but changes at this level are discussed in more detail. Conclusions of this analysis are described as follows.

The majority of effects of the Proposed Project involve an improvement in habitat conditions for steelhead and coho compared to the Baseline condition (Table 3). The only negative effect is a 2.7% decline in the rearing habitat index in wet years for coho in Laguna Creek (Table 3, Figure 12a). This decline is actually a result of higher flows in April provided for steelhead adult migration under the Proposed Project Agreed Flows. Coho rearing habitat is at optimum levels at lower flows than those provided for adult migration. Even with this effect, the wet year coho rearing index remains at 90% of the peak level in Laguna Creek (Figure 12a). This minor effect on rearing habitat is not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the thresholds for mandatory findings of significance under CEQA (Section 4.2). Specifically, a change of this magnitude in the rearing index would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or, substantially reduce the number or restrict the range of coho.

Habitat improvements for adult migration and spawning in normal and wet years in Laguna Creek and Liddell Creek (Table 3, Figures 6a, 7a, 6b, 7b) are consistent with the fact that bypass flows are provided for migration in April in 0-60% hydrologic exceedance conditions and for spawning in December under the Agreed Flows with the Proposed Project (see Appendix C), whereas they were not included in the interim bypass flow requirements in place in 2018 for the Baseline. Although April migration flows are also included in Majors Creek, we do not see the same benefits as in Laguna and Liddell Creeks. Winter diversions at Majors Creek are limited by pipeline capacity, particularly in wetter conditions, and are therefore not substantially different under the Baseline and Proposed Project.

Habitat indices are improved with the Proposed Project for adult migration and steelhead spawning in the San Lorenzo River downstream of the Felton Diversion, with the largest increases in dry and critical years (Table 3, Figures 6e, 7d, 10c). This is consistent with the ASHCP, which emphasizes improvements in Laguna Creek and the San Lorenzo River. It is a direct result of the 40 cfs bypass flow for adult migration and spawning provided in the Agreed Flows with the Proposed Project. The interim bypass flow requirements under the Baseline do not have this provision. Spawning suitability data for coho in the San Lorenzo River downstream of the Felton Diversion are not available but evaluation of change in flow shows a small increase (0.1%) or small decreases (-0.3% or less) during the coho spawning period, indicating that any effect on coho spawning would likely be insignificant.

**Table 3: Habitat effects of the Proposed Project compared to Baseline Alternative as percent change from Baseline using historical hydrology.**

| Stream Reach | | Steelhead: Adult migration (m) | Steelhead: Spawning/incubation (i) | Steelhead: Rearing (r) | Steelhead: Smolt migration (s) | Coho: Adult migration (cm) | Coho: Spawning/incubation (ci) | Coho: Rearing (cr) | Coho: Smolt migration (cs) |
|---|---|---|---|---|---|---|---|---|---|
| Laguna Anadromous | wet | 8.5% | 5.9% | o | o | o | + | -2.7% | o |
| | normal | o | 3.3% | o | o | o | + | - | o |
| | dry | o | + | o | o | o | + | - | o |
| | critically dry | o | + | o | o | o | + | o | o |
| Liddell Anadromous | wet | 4.1% | 3.4% | o | o | | | | |
| | normal | 5.0% | 3.4% | o | o | | | | |
| | dry | o | - | - | o | | | | |
| | critically dry | o | - | - | o | | | | |
| Majors Anadromous | wet | o | + | o | o | | | | |
| | normal | o | + | o | o | | | | |
| | dry | o | - | - | o | | | | |
| | critically dry | o | o | o | o | | | | |
| San Lorenzo below Tait St | wet | o | | - | o | o | | | o |
| | normal | o | | - | o | o | | | o |
| | dry | o | | - | o | o | | | o |
| | critically dry | o | | - | o | o | | | o |
| San Lorenzo below Felton | wet | + | + | - | o | 4.9% | - | - | o |
| | normal | + | + | - | o | 4.6% | - | - | o |
| | dry | 8.0% | 2.6% | o | o | 15.8% | ***+*** | ***o*** | o |
| | critically dry | 22.0% | 6.4% | o | o | 15.3% | - | ***o*** | o |
| Newell Anadromous | wet | 6.3% | 4.5% | + | 3.4% | 15.9% | 5.1% | - | 3.4% |
| | normal | 19.9% | 10.1% | o | 14.0% | 19.8% | 9.2% | - | 14.0% |
| | dry | 50.5% | 27.1% | + | 44.5% | o | 29.6% | + | 44.5% |
| | critically dry | o | 26.3% | 8.6% | o | o | 50.0% | 2.0% | o |

"-" = <2% decrease in habitat index

"+" = <2% increase in habitat index

"o" = no change in habitat index, or change of 1 day or less in migration periods

Values for coho spawning and rearing below Felton (bold italic) based on change in flow rather than habitat indices

Differences in habitat index values in Newell Creek downstream of Newell Creek Dam/Loch Lomond Reservoir are the result of differing reservoir operations between the Baseline and Proposed Project. Bypass requirements for habitat are the same under the Baseline and Proposed Project in this location, but habitat provided by reservoir spill is altered by operation of the Proposed Project. Specifically, the increased capacity of the GHWTP, described in Appendix D-2, results in the ability to take more water at the Tait Diversion, offsetting water that would otherwise be withdrawn from Loch Lomond Reservoir. The effect is most pronounced in dry and critical year types, although, while the differences are large in percentage terms, they are not necessarily large in overall magnitude (Table 3, Figures 6f, 7e, 9f, 10d, 11c, 13d). For example, the 50.5% increase in the steelhead adult migration index in dry years amounts to only 3 additional days (from 7 days to 10 days) and therefore the improvement may not be biologically significant (Figure 6f). Habitat index values are low in dry and critical years even with no City diversion (i.e., Loch Lomond Reservoir operations and diversion not present, Figures 6f, 7e, 9f, 10d, 11c, 13d).

*Proposed Project with Historical Hydrology – Water Temperature*

The Proposed Project results in slightly higher reservoir elevations at Loch Lomond Reservoir and more frequent spill conditions. Hydrologic modeling indicates that the Proposed Project would result in increased spill mostly in the winter and spring and infrequently during the warmer months of July and August (less than 4% of the time) (see Draft EIR Chapter 8, Alternatives). Spill in June would occur 38% of the time with the Proposed Project compared to 19% under the Baseline. Increased spill during the winter could benefit steelhead and coho during the adult migration, spawning, and smolt migration life-stages. Increased frequency of spill in April and May with associated warmer temperatures may actually be beneficial for rearing steelhead (and coho if present) as long as the temperature is still within the suitable range. Salmonids grow faster at warmer temperatures within the suitable range with adequate food supply. Increased spill in June may also be beneficial as long as it does not result in temperature above the suitable level.

At times when the reservoir is spilling and the 1 cfs fish release is not sufficient to maintain temperature in Newell Creek below 21°C, Standard Operational Practice #6 requires the City to release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam. With the implementation of this operational practice, potential adverse temperature effects in Newell Creek and the San Lorenzo River due to an increase in spill frequency with the Proposed Project would be avoided. Therefore, the Proposed Project would not substantially reduce the habitat of coho and steelhead, or otherwise substantially reduce the number or restrict the range of these species.

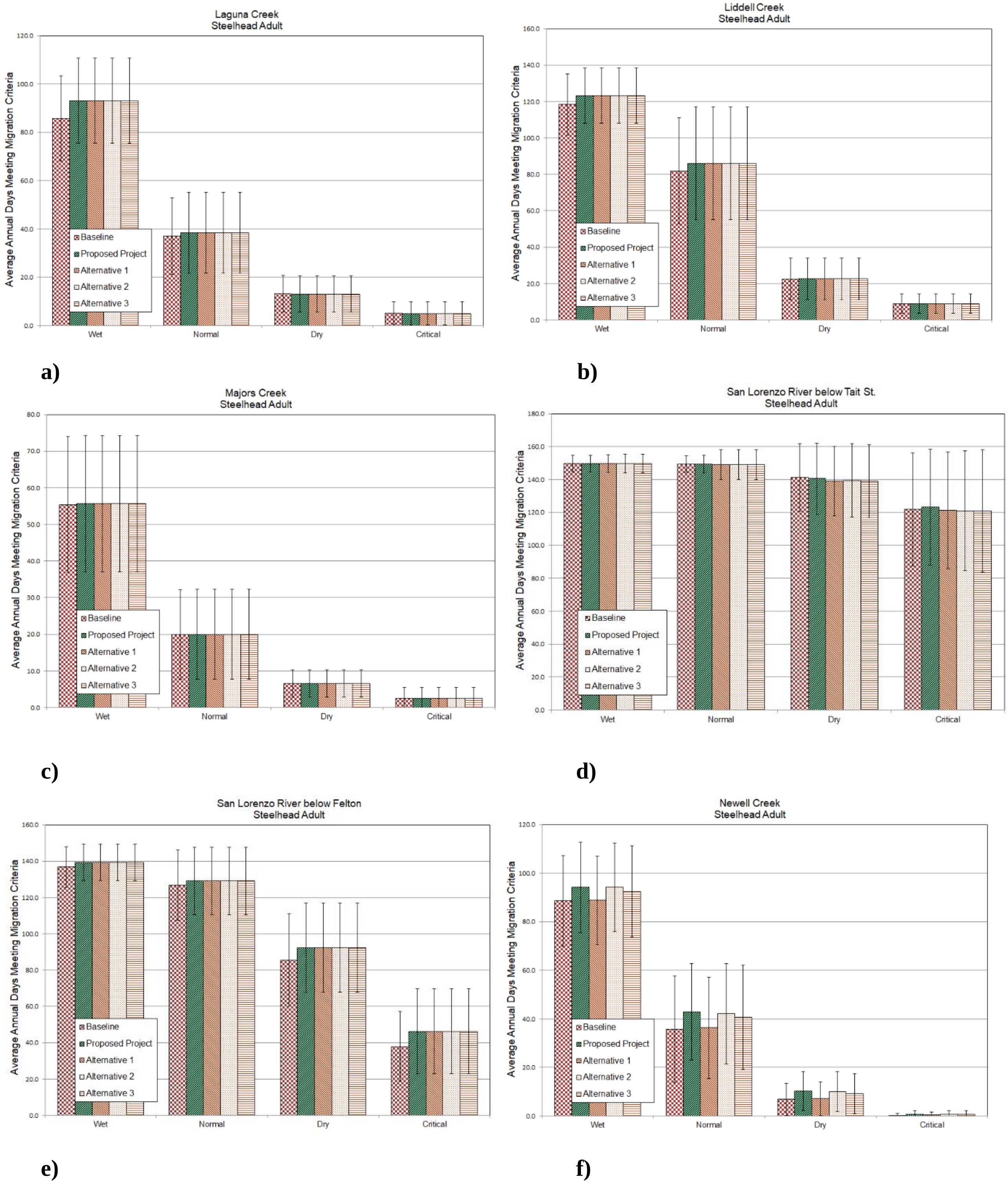
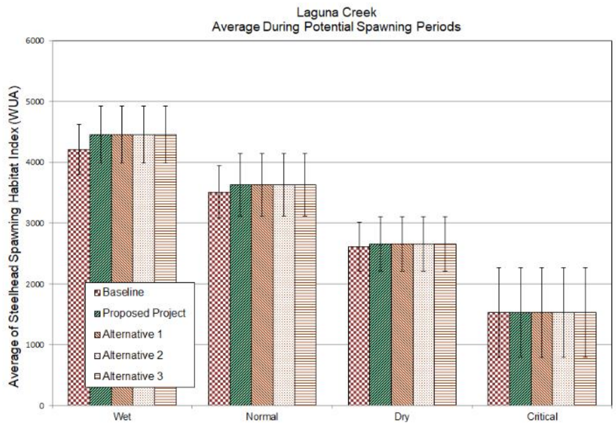
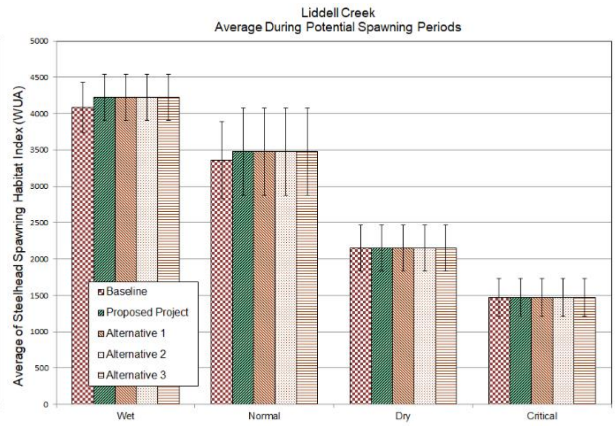



**Figure 6: Modeled Adult Migration Index for Steelhead by Stream Reach with Historical Hydrology**




a)

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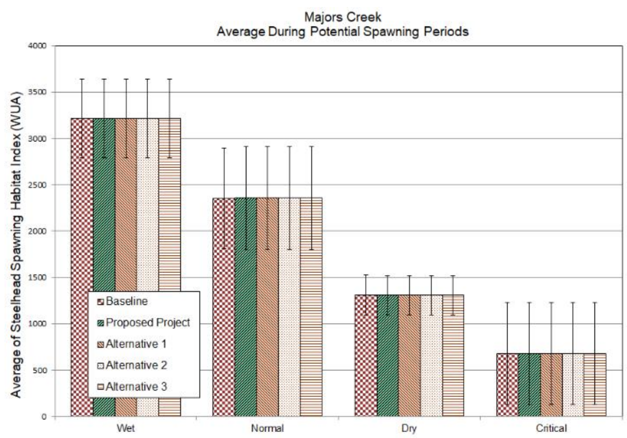
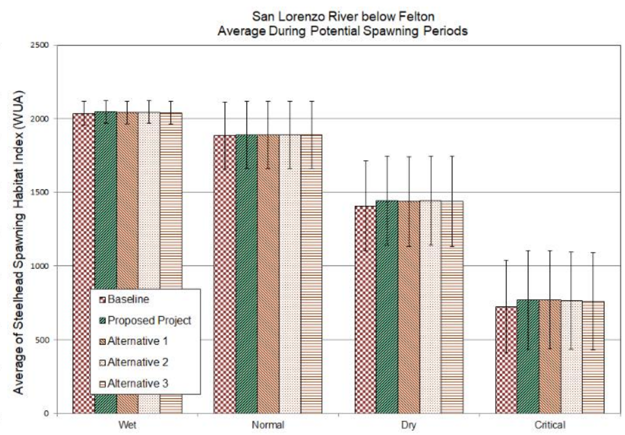
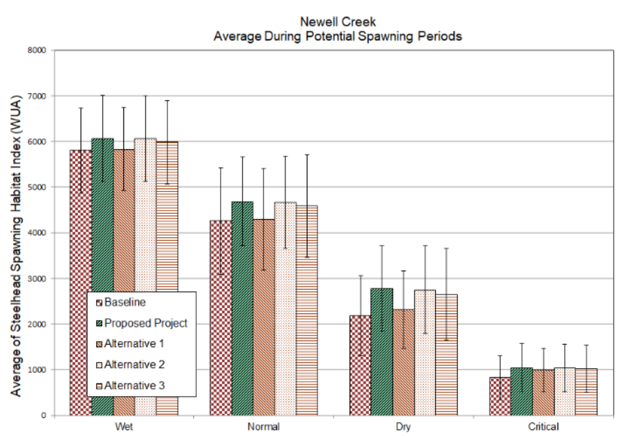



c)




d)




e)

f)

**Figure 7: Modeled Spawning Index for Steelhead by Stream Reach with Historical Hydrology**

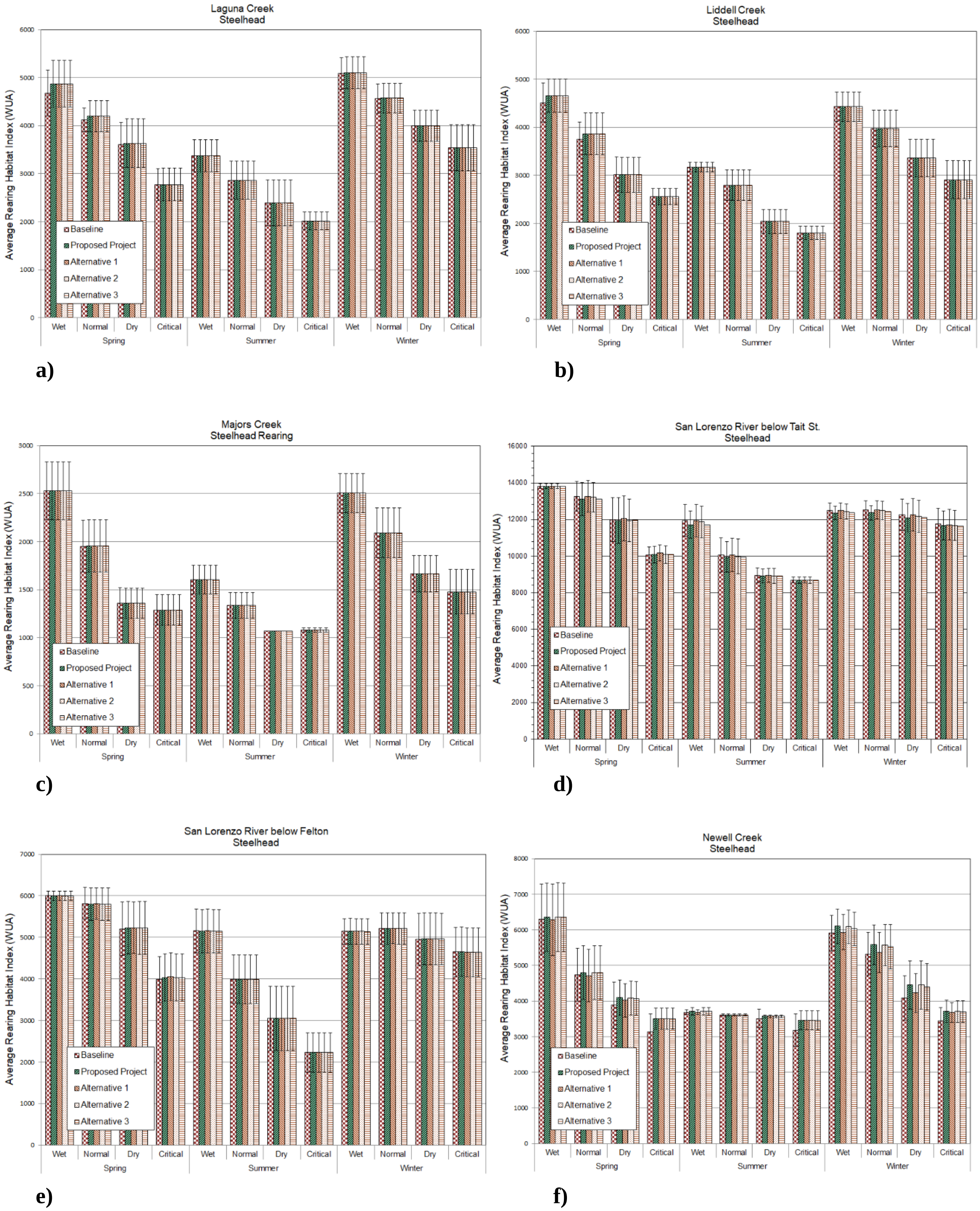



**Figure 8: Modeled Juvenile Rearing Index for Steelhead by Stream Reach with Historical Hydrology**

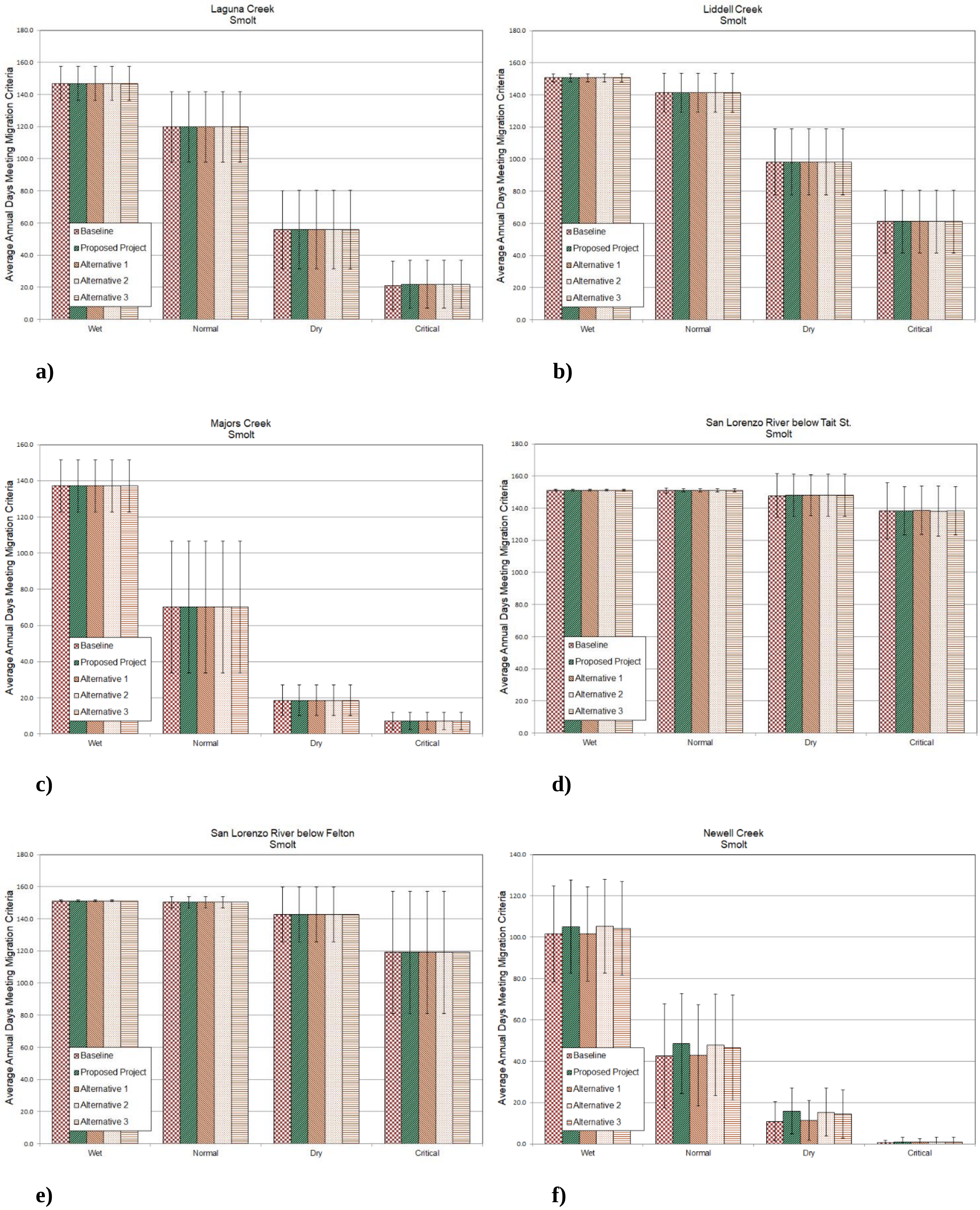



**Figure 9: Modeled Smolt Migration Index for Steelhead by Stream Reach with Historical Hydrology**

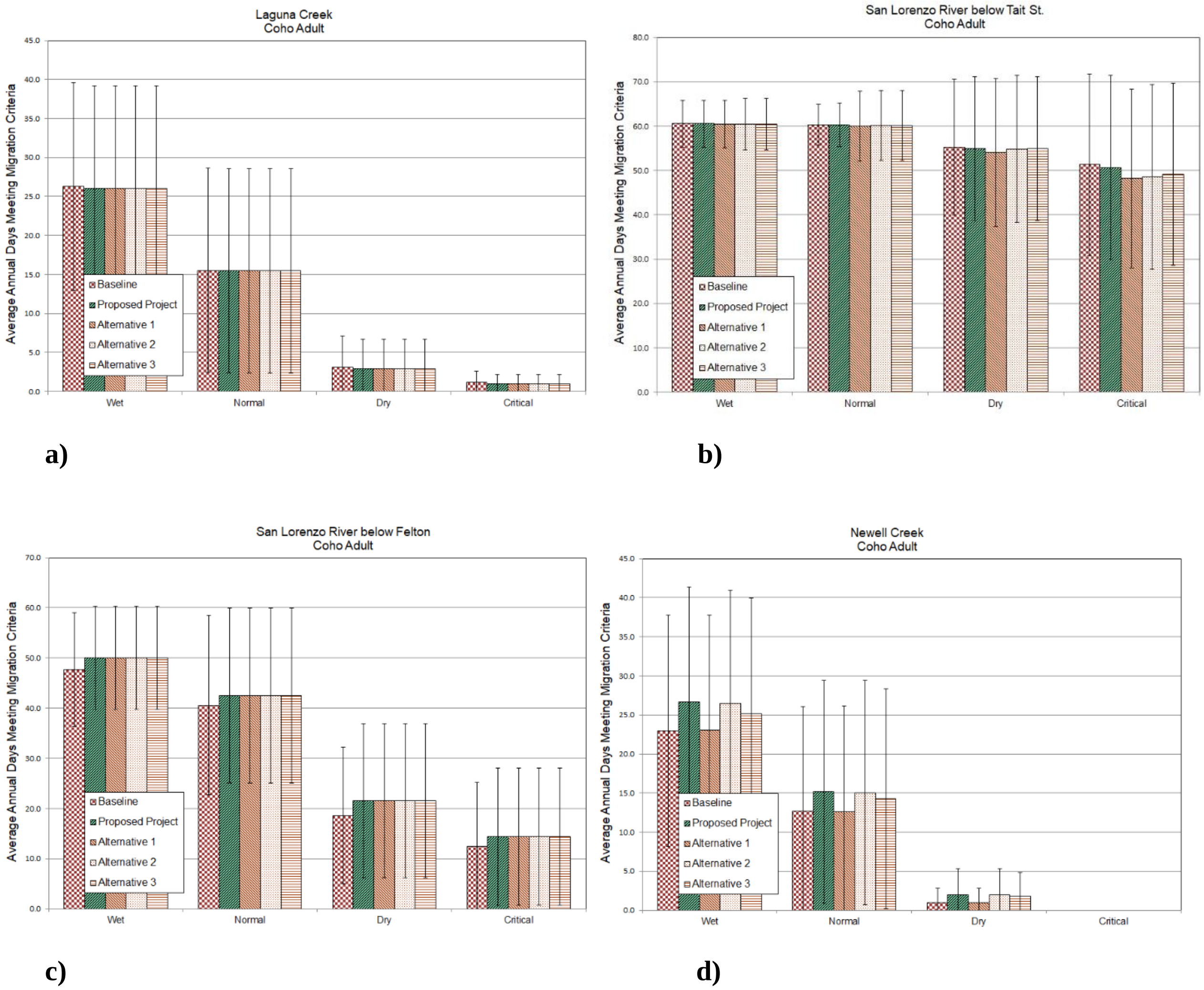
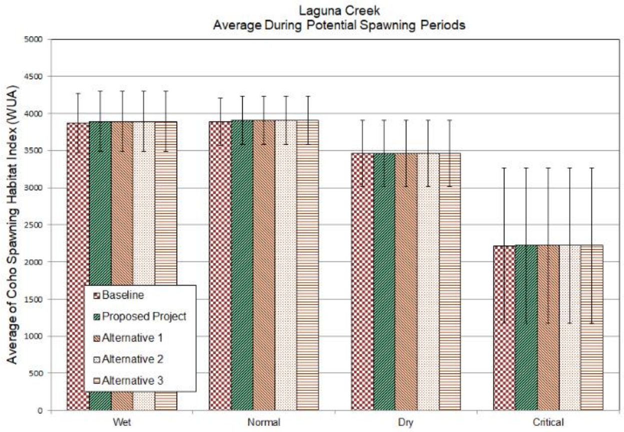
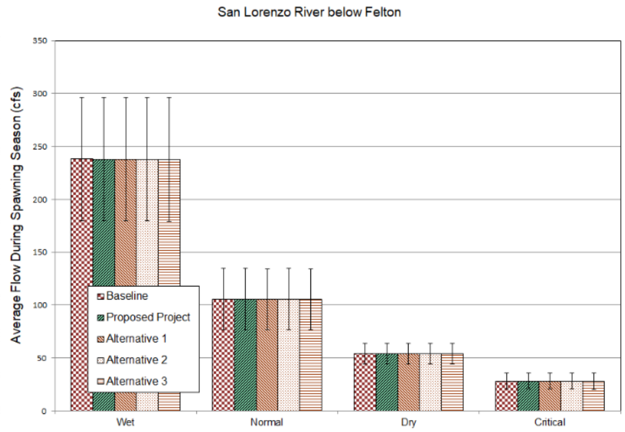



**Figure 10: Modeled Adult Migration Index for Coho by Stream Reach with Historical Hydrology**




**a)** **b)**

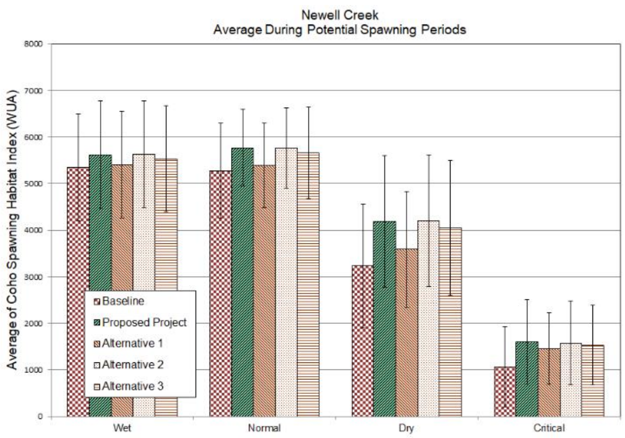



**Figure 11: Modeled Spawning Index for Coho by Stream Reach with Historical Hydrology**

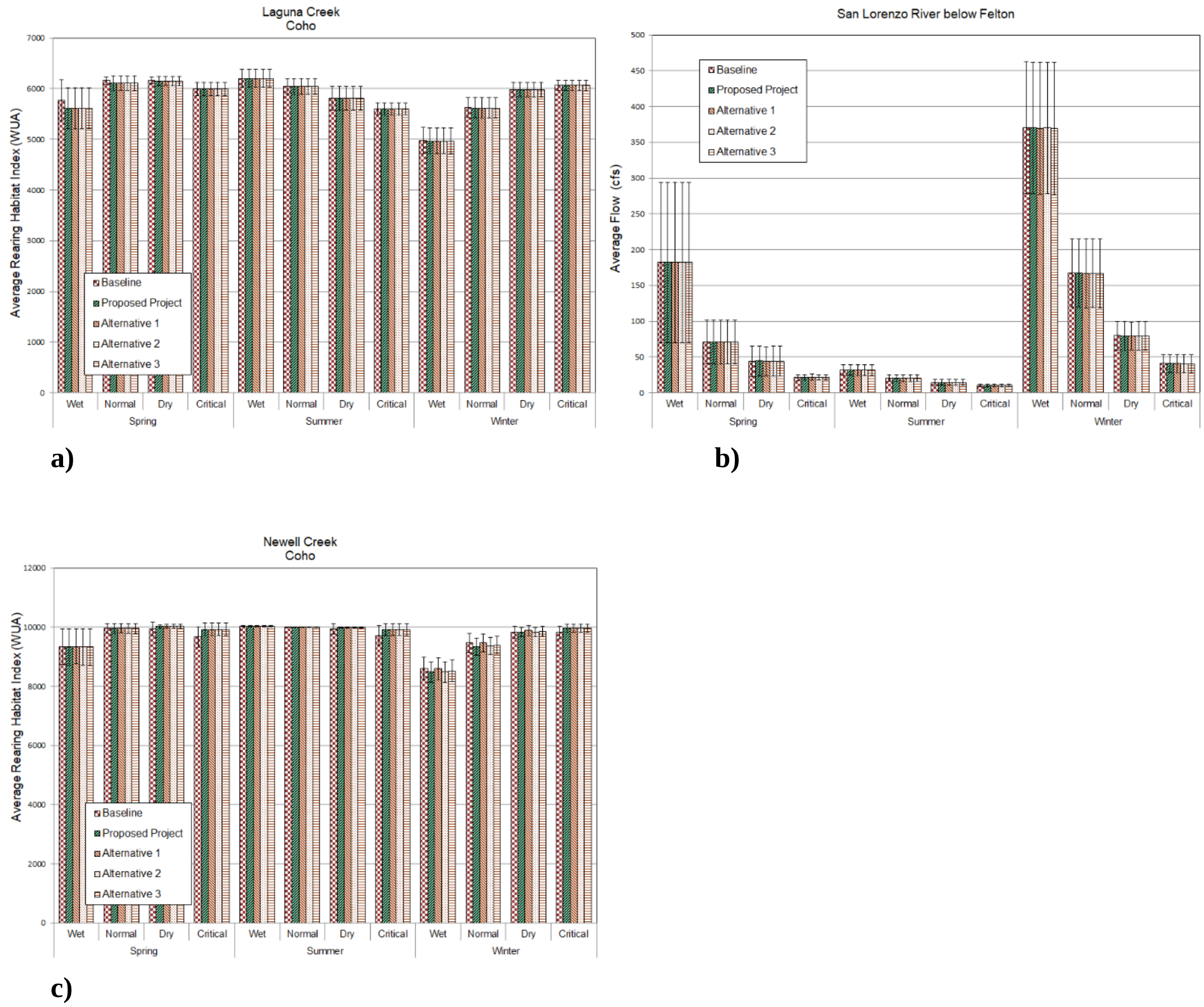



**Figure 12: Modeled Juvenile Rearing Index for Coho by Stream Reach with Historical Hydrology**

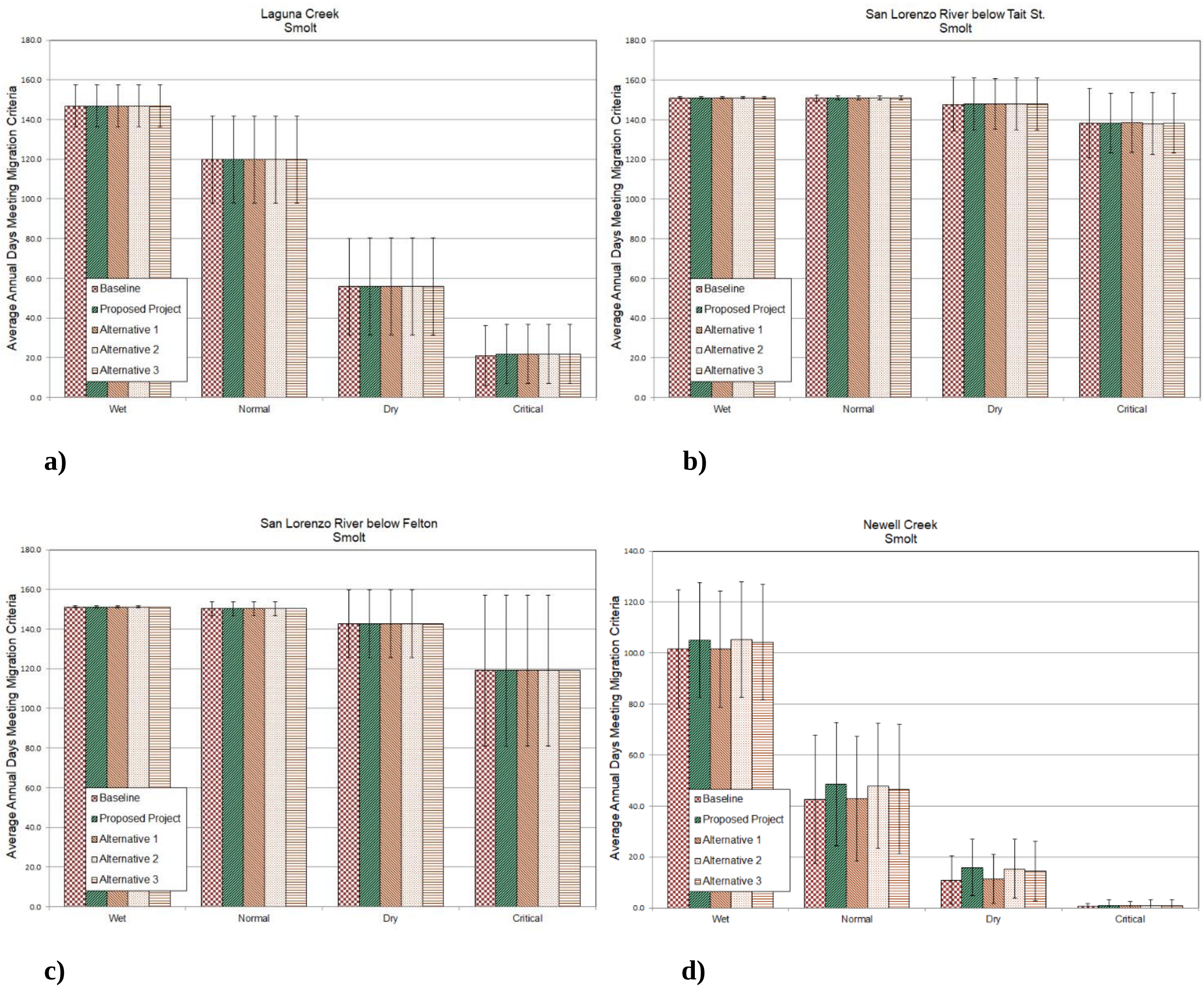



**Figure 13: Modeled Smolt Migration Index for Coho by Stream Reach with Historical Hydrology**

*Proposed Project with Climate Change Hydrology – Habitat Indices*

Effects of the Proposed Project on habitat indices were also evaluated using hydrological conditions predicted to occur with climate change (see Appendix D-1 for a description of how climate change hydrology was developed). The results for climate change are presented by water year type with water year type determined by the frequency of water year total runoff in the climate change hydrology. The wettest one-third is designated as "wet", the next one-third are designated as "normal", and the driest one-third is split in half between "dry" and "critical". This is consistent with the presentation of results for the historical hydrology (see Appendix C).

A summary of the habitat effects of the Proposed Project with climate change hydrology is provided for steelhead and coho life stages in each of the stream reaches influenced by City diversions (Table 4). The results for climate change hydrology have similar patterns to the results for historical hydrology. The majority of effects of the Proposed Project involve an improvement in habitat conditions for steelhead and coho compared to the Baseline (Table 4). Negative effects are limited to coho rearing in Laguna Creek in normal and wet years and smolt migration in the San Lorenzo River downstream of the Tait Diversion in dry years. As described previously, the decline in the coho rearing habitat index is a result of higher flows in April provided for adult steelhead migration under the Proposed Project Agreed Flows. Coho rearing habitat is at optimum levels at lower flows than those provided for adult migration. Even with this effect, the wet year coho rearing index remains at 80% of the peak level in Laguna Creek (Figure 20a). This minor effect on rearing habitat is not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the thresholds for mandatory findings of significance under CEQA (Section 4.2). Specifically, a change of this magnitude in the rearing index would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or, substantially reduce the number or restrict the range of coho.

The smolt index downstream of the Tait Diversion is decreased in dry years with the Proposed Project due to modification of the smolt bypass flows during HC-5 conditions (see Appendix C). The increased capacity at the Tait Diversion under the Proposed Project results in more frequent flows below the smolt threshold on the four days per week when smolt bypass flows are not required. There are still a relatively large number of days (about 120 out of 150 possible) when conditions are suitable for smolt migration (Figure 17d) under the Proposed Project. This is a minor effect on smolt migration that is unlikely to have biological significance. It would not be considered a "substantial effect" under CEQA standards of significance or meet any of the thresholds for mandatory findings of significance under CEQA (Section 4.2). Specifically, a change of this magnitude in the smolt index would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or, substantially reduce the number or restrict the range of coho.

Extremely low habitat indices with climate change hydrology in dry and critical years in some locations (Newell Creek, Laguna Creek, and downstream of the Felton Diversion to some degree), even with no City diversions, could be problematic, particularly for viability of coho (Figures 18a, 18d, 21a, 21d). These conditions occur in one-third of modeled water years and, due to lack of life-history variability in coho, lost year classes are not easily re-established. This is a feature of the altered hydrology and not related to implementation of the Proposed Project.

**Table 4: Habitat effects of the Proposed Project compared to Baseline Alternative as percent change from Baseline using projected hydrology with climate change.**

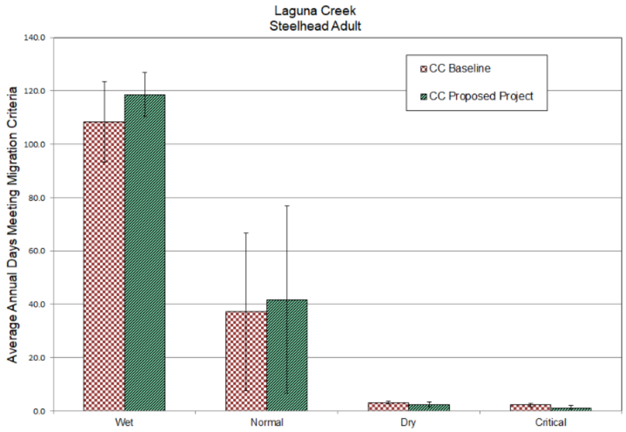
| Stream Reach | | Steelhead Adult migration (m) | Steelhead Spawning/incubation (i) | Steelhead Rearing (r) | Steelhead Smolt migration (s) | Coho Adult migration (cm) | Coho Spawning/incubation (ci) | Coho Rearing (cr) | Coho Smolt migration (cs) |
|---|---|---|---|---|---|---|---|---|---|
| Laguna Anadromous | wet | 9.4% | 3.3% | o | o | o | + | -2.9% | o |
| | normal | 12.3% | 6.5% | o | o | o | + | -2.0% | o |
| | dry | o | - | o | o | o | + | o | o |
| | critically dry | o | - | o | o | o | + | o | o |
| Liddell Anadromous | wet | 8.2% | 4.7% | - | o | | | | |
| | normal | 8.0% | 2.0% | o | o | | | | |
| | dry | o | o | - | o | | | | |
| | critically dry | o | o | - | o | | | | |
| Majors Anadromous | wet | o | + | - | o | | | | |
| | normal | o | + | o | o | | | | |
| | dry | o | o | o | o | | | | |
| | critically dry | o | o | o | o | | | | |
| San Lorenzo below Tait St | wet | o | | - | o | o | | | o |
| | normal | o | | - | o | o | | | o |
| | dry | 4.0% | | - | -4.0% | o | | | -4.0% |
| | critically dry | 7.1% | | - | o | 3.2% | | | o |
| San Lorenzo below Felton | wet | + | 2.5% | o | o | 4.3% | - | - | o |
| | normal | 7.4% | 5.9% | - | o | 13.0% | ***+*** | - | o |
| | dry | 42.5% | 28.6% | o | o | 29.4% | ***2.7%*** | ***o*** | o |
| | critically dry | 48.4% | 22.5% | o | o | 32.0% | ***2.5%*** | ***o*** | o |
| Newell Anadromous | wet | 4.9% | 2.1% | o | 2.9% | 24.5% | + | - | 2.9% |
| | normal | 7.3% | 6.2% | + | 6.2% | o | 9.5% | + | 6.2% |
| | dry | o | 17.2% | 7.6% | o | o | 35.7% | + | o |
| | critically dry | o | 10.7% | 8.3% | o | o | 18.1% | + | o |

"-" = <2% decrease in habitat index

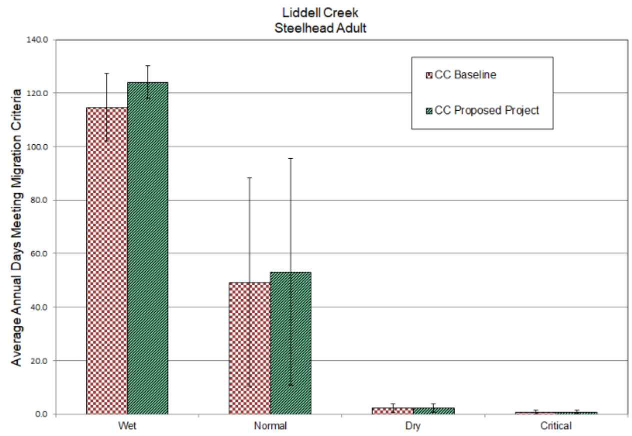
"+" = <2% increase in habitat index

"o" = no change in habitat index, or change of 1 day or less in migration periods

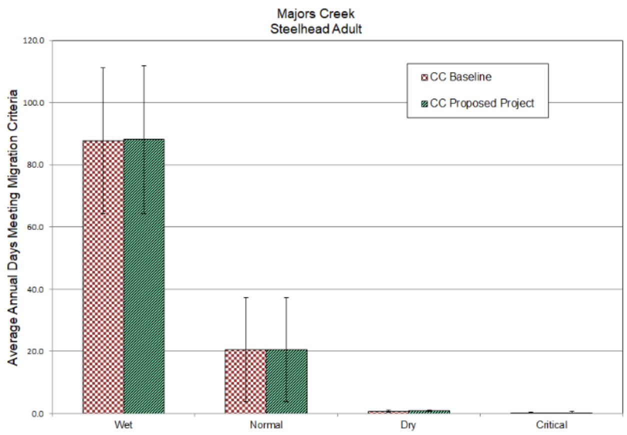
Values for coho spawning and rearing below Felton (bold italic) based on change in flow rather than habitat indices



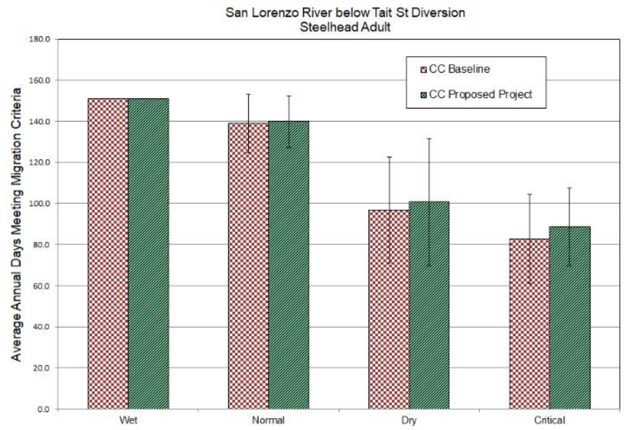

a)



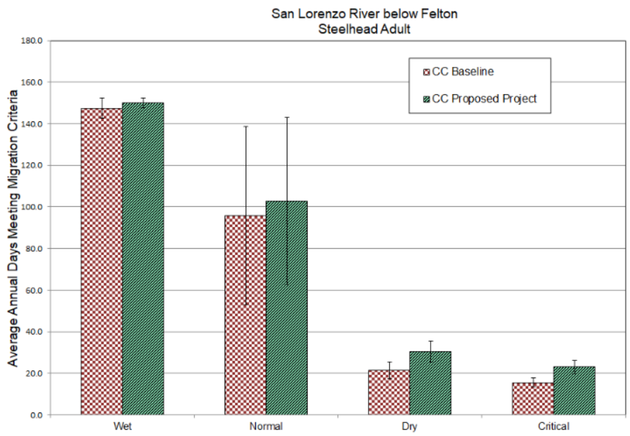

b)



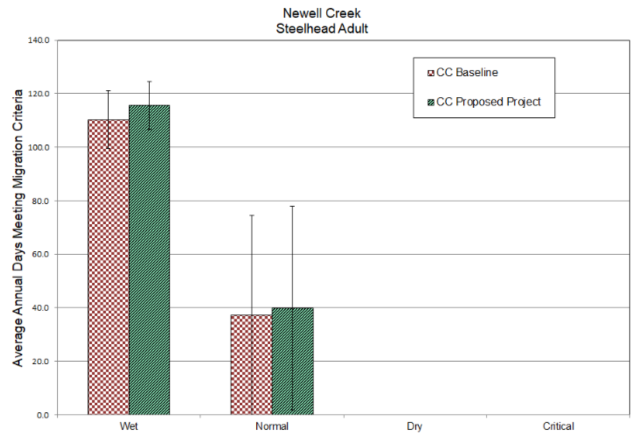

c)




d)




e)




f)

**Figure 14: Modeled Adult Migration Index for Steelhead by Stream Reach with Climate Change Hydrology**

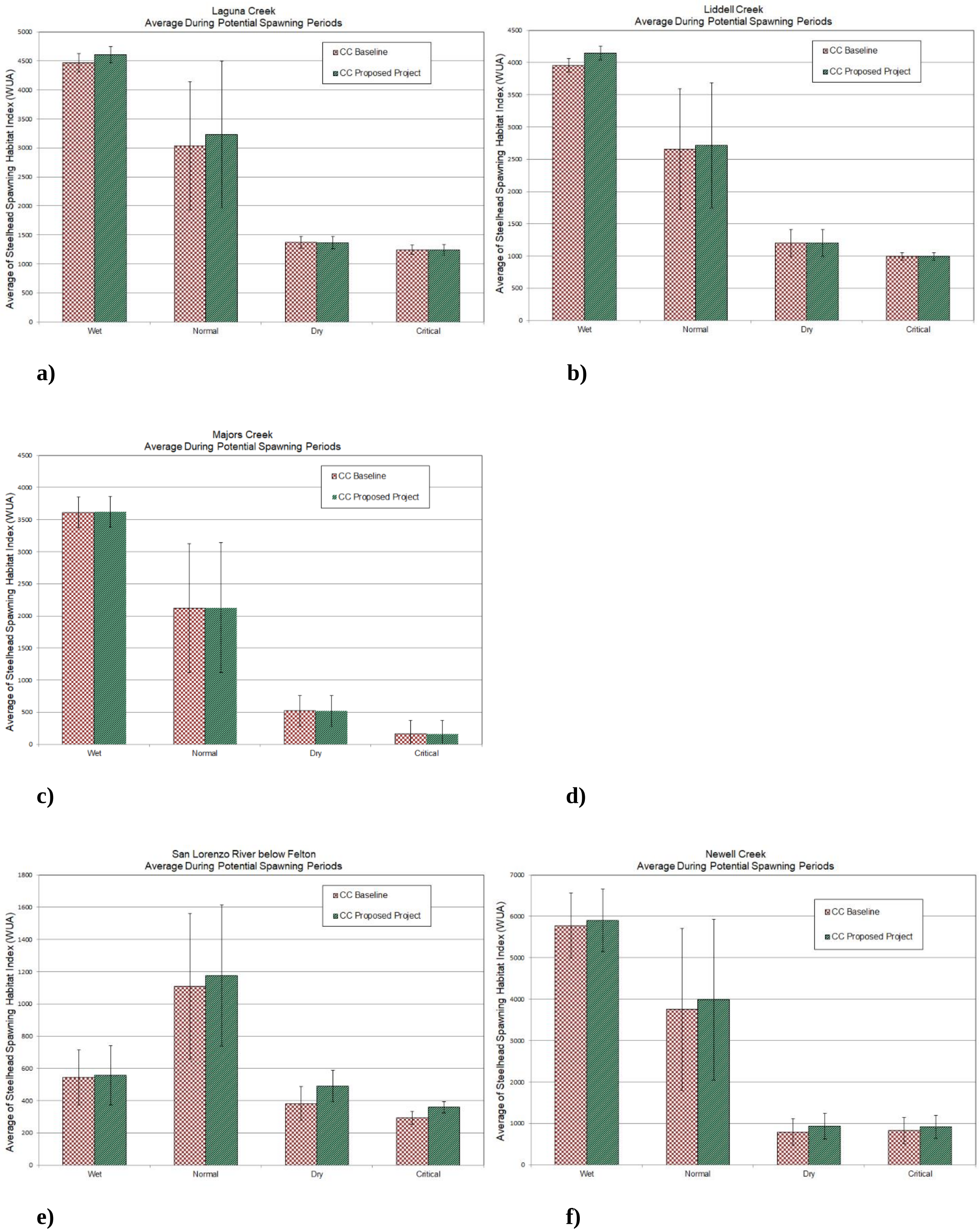



**Figure 15: Modeled Spawning Index for Steelhead by Stream Reach with Climate Change Hydrology**

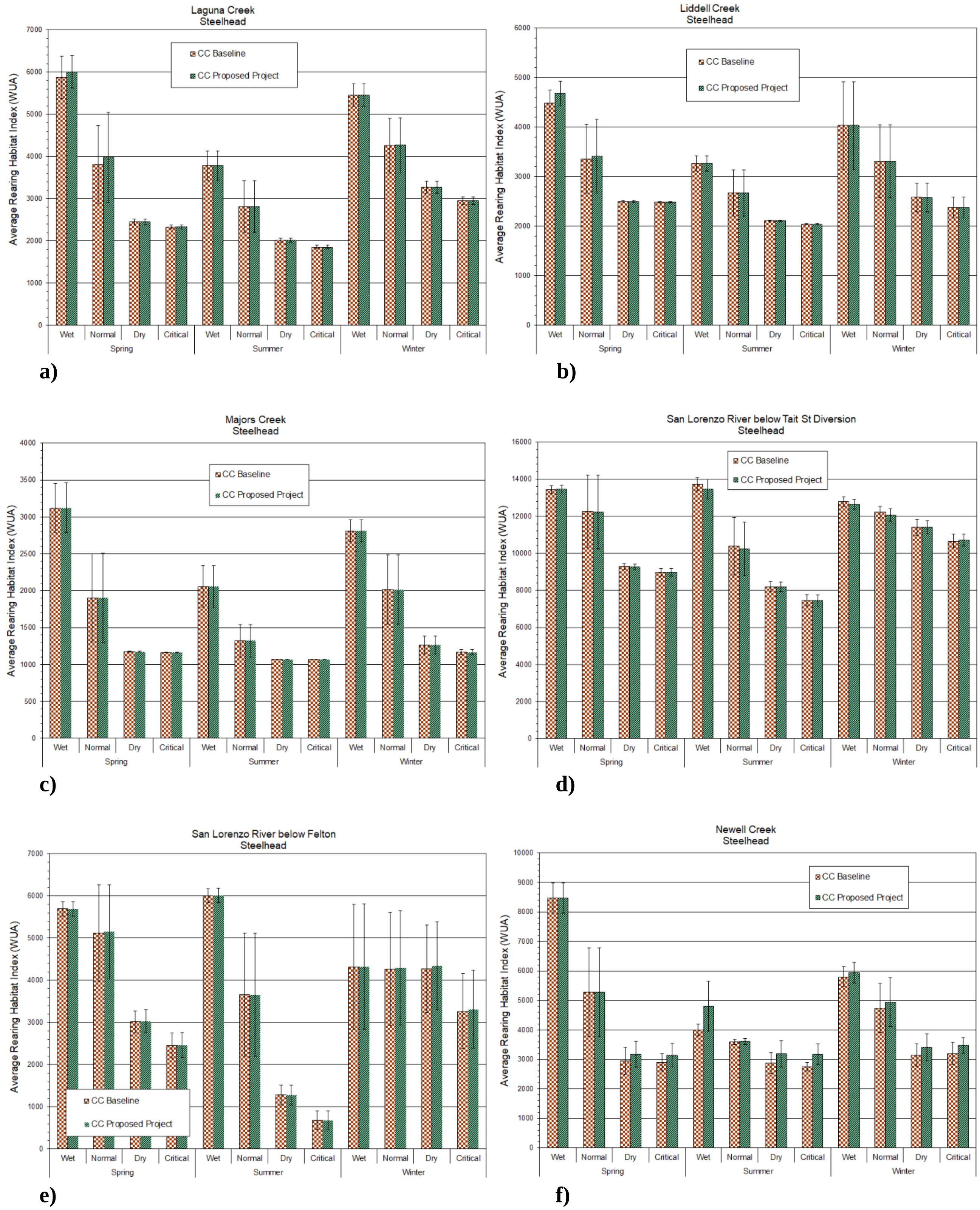



**Figure 16: Modeled Juvenile Rearing Index for Steelhead by Stream Reach with Climate Change Hydrology**

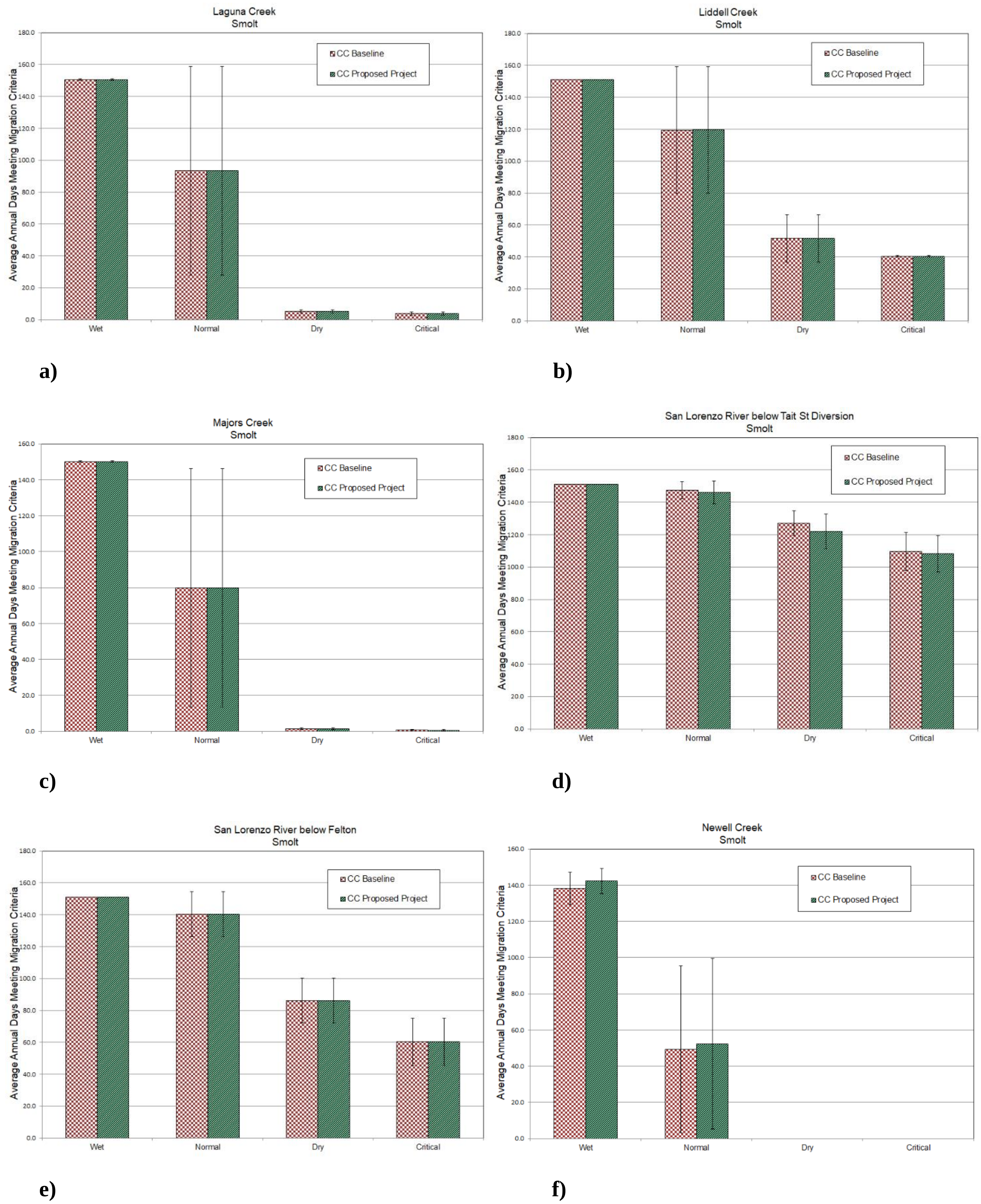
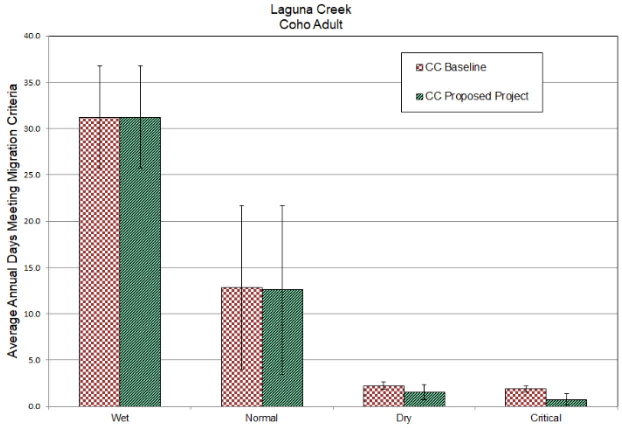
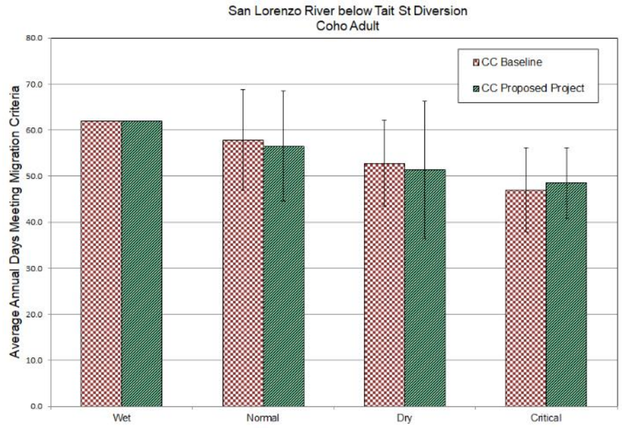


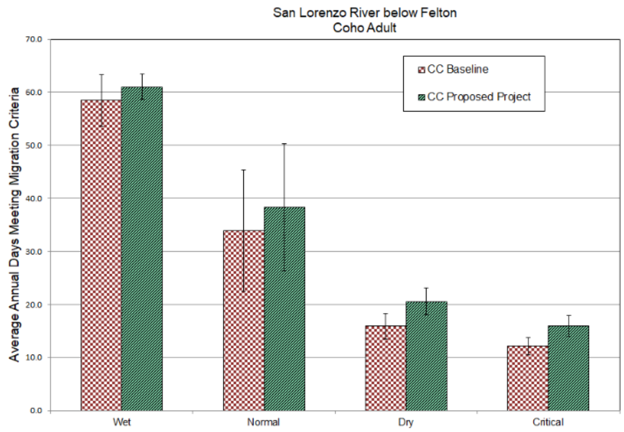

**Figure 17: Modeled Smolt Migration Index for Steelhead by Stream Reach with Climate Change Hydrology**



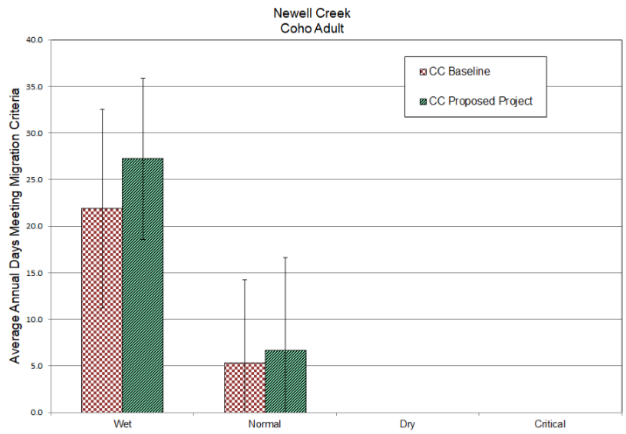

a)




b)

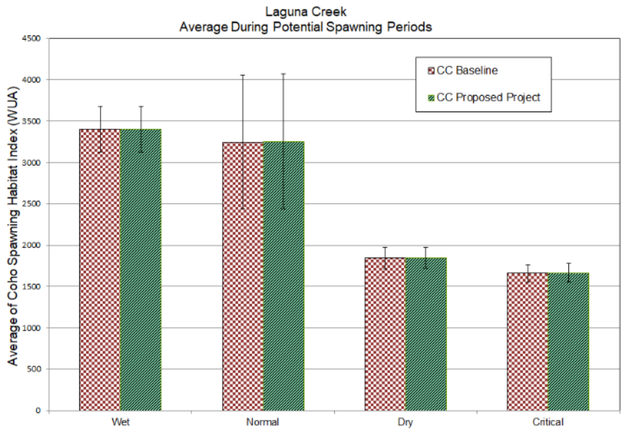



c)

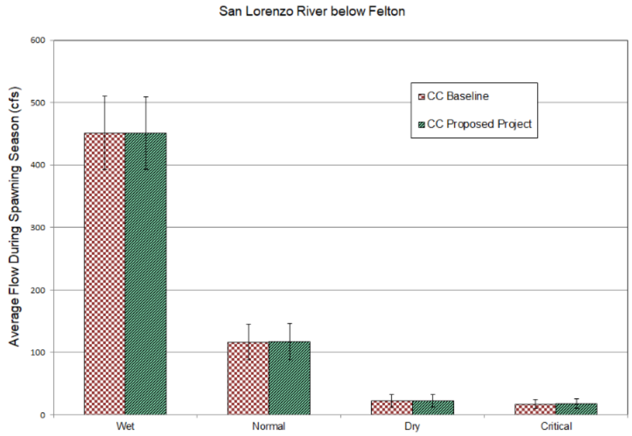



d)

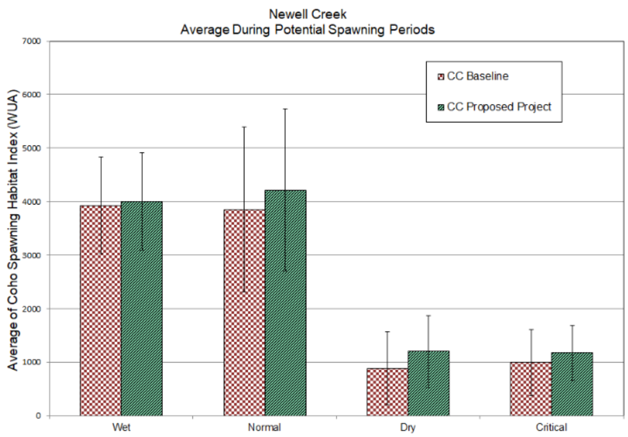
**Figure 18: Modeled Adult Migration Index for Coho by Stream Reach with Climate Change Hydrology**




**a)**




**b)**




**c)**

**Figure 19: Modeled Spawning Index for Coho by Stream Reach with Climate Change Hydrology**

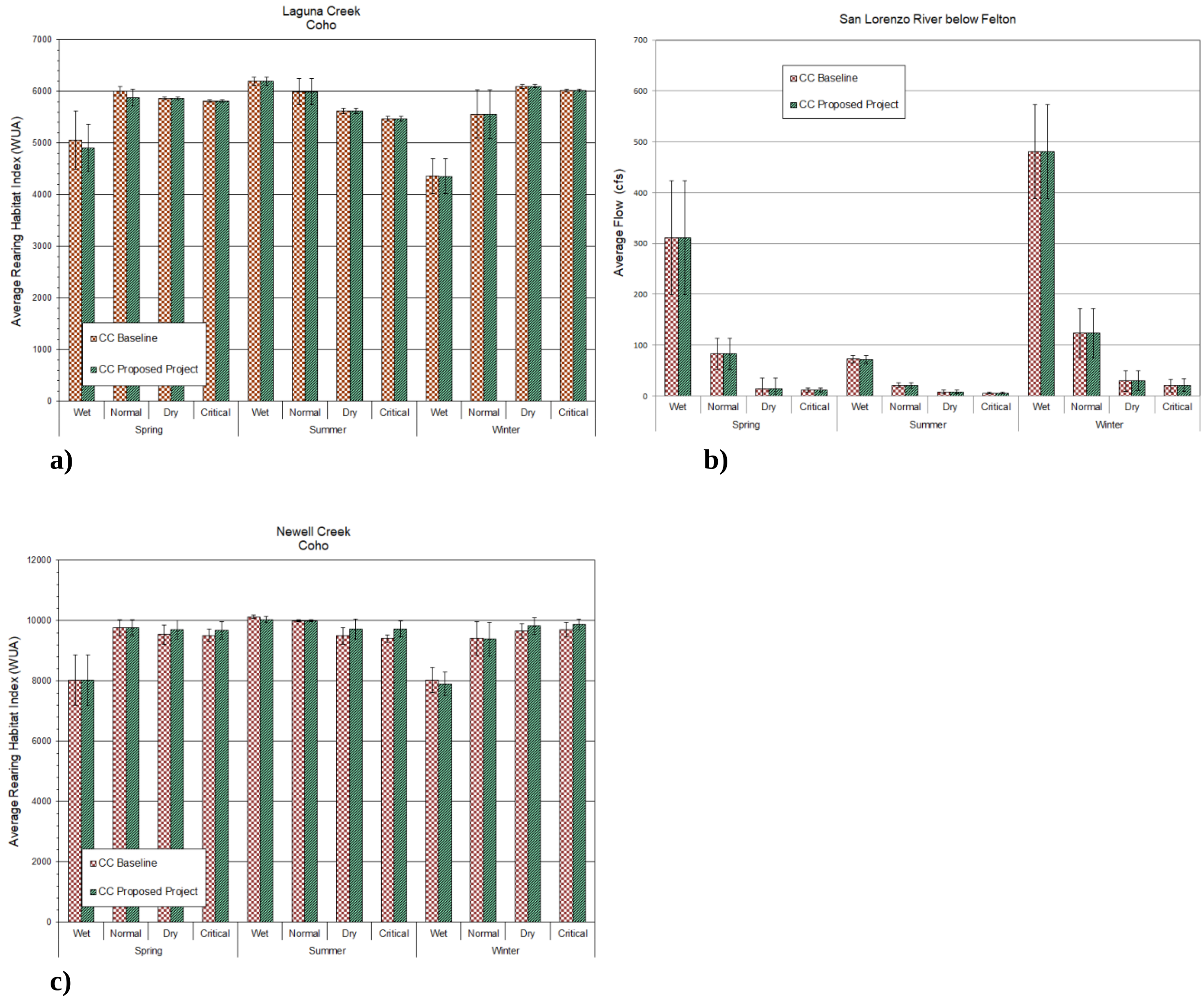
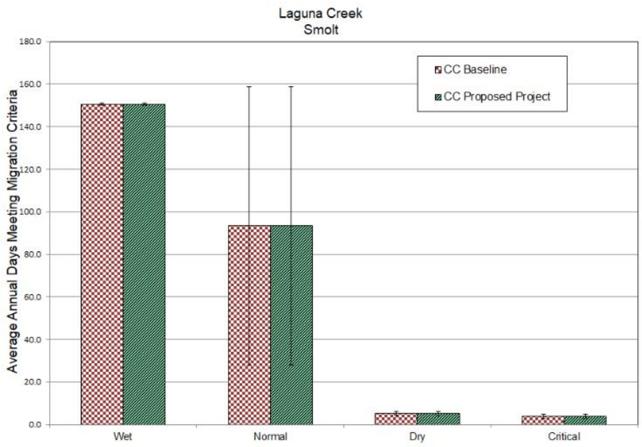
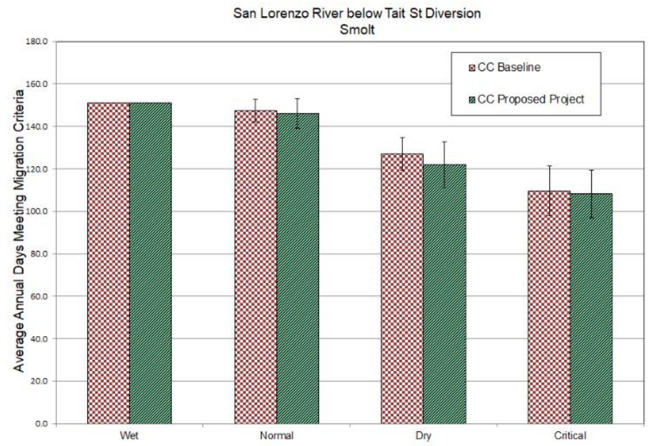


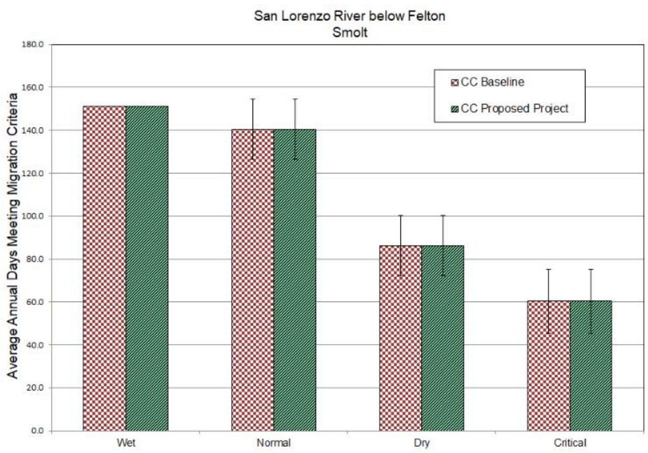

**Figure 20: Modeled Juvenile Rearing Index for Coho by Stream Reach with Climate Change Hydrology**



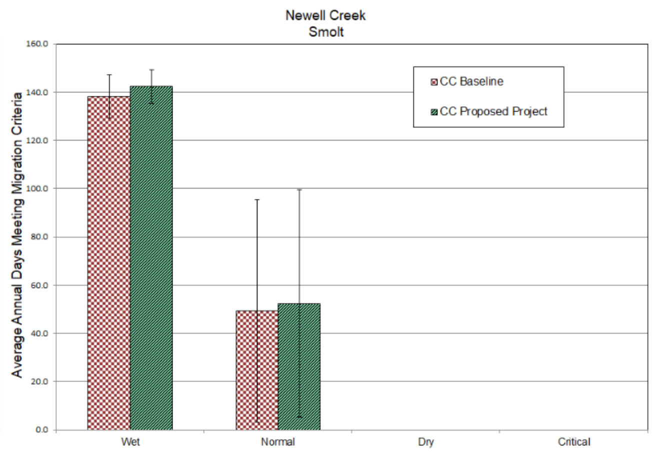

**a)**




**b)**




**c)**




**d)**

**Figure 21: Modeled Smolt Migration Index for Coho by Stream Reach with Climate Change Hydrology**

*Proposed Project with Climate Change Hydrology – Water Temperature*

Average annual air temperature in California has increased through the 20th century with the rate of increase accelerating since the 1980s (OEHHA 2018). Air temperature projections for the 21st century show continued increases from 2 to 4°C in the San Francisco Bay Area (Flint and Flint 2012). The increase in minimum (nighttime) temperatures have increased at a faster rate than maximum (daytime) temperatures. Since air temperature is the major determining factor for water temperature, temperature of aquatic systems is likely to show similar trends. The ability of aquatic species to persist in presently occupied habitats will depend on the rate of increase and the ability of the species to adapt to changing conditions.

The Santa Cruz mountains currently represent the southern margin for the range of coho with temperature and associated habitat features (redwood forest) being a major determinant, if not the major determining factor, in the extent of their range. Coho do not presently maintain viable populations in the San Lorenzo River and its tributaries in the southern part of Santa Cruz County where the City has its water supply operations. Water temperature in many of the streams in Santa Cruz County is presently at or near the level limiting coho persistence (City of Santa Cruz 2021) and may explain why coho are no longer present. Increasing temperatures will only exacerbate these effects. Steelhead have slightly greater tolerance of high temperature than coho but they are also near the southern edge of their present range and, at least in the San Lorenzo River, near their upper thermal tolerance range.

These effects are unrelated to and will occur regardless of the Proposed Project. However, there may be synergies between aspects of the Proposed Project and climate change that have an effect on steelhead or coho. With the Proposed Project, storage in Loch Lomond Reservoir is predicted to be high with greater frequency than under the Baseline, with the result that spill from the reservoir will be more frequent with the Project (see Draft EIR Section 7, Climate Change Considerations). This could benefit steelhead and coho during the adult migration, spawning, and smolt migration life-stages, though the increase in spill frequency is relatively small.

At times when the reservoir is spilling and the 1 cfs fish release is not sufficient to maintain temperature in Newell Creek below 21°C, Standard Operational Practice #6 requires the City to release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam. With the implementation of this operational practice, potential adverse temperature effects in Newell Creek and the San Lorenzo River due to an increase in spill frequency with the Proposed Project would be avoided. Therefore, the Proposed Project would not substantially reduce the habitat of coho and steelhead, or otherwise substantially reduce the number or restrict the range of these species.

### 4.4.2. Evaluation of Any Significant Effects

The Proposed Project incorporates Agreed Flows and some conservation and mitigation measures from the ASHCP (see EIR Chapter 3 and Appendix C), including improvements to fish screening at the Tait and Felton Diversions and improving fish passage at the Felton Diversion and as needed at the Tait Diversion. Habitat modeling indicates that, although there are isolated instances of minor effects to some life stages in some reaches relative to the Baseline, the Proposed Project would result in a net beneficial effect on both species (Table 4). Based on historic hydrology and projected climate change hydrology, the Proposed Project would not have a substantial adverse effect on habitat indices for steelhead or coho in the project area. The habitat models also indicate that the Proposed Project would not interfere substantially with migration of steelhead or coho. Additionally, with the implementation of Standard Operational Practice #6 as part of the Proposed Project, potential adverse water temperature effects due to an increase in reservoir spill frequency would be avoided. Based on CEQA standards of significance and thresholds for mandatory findings of significance (Section 4.2), the Proposed Project is expected to have a less-than-significant impact on steelhead and coho, based on both the historical hydrology and projected climate change hydrology.

### 4.5. **Alternative 1:** Agreed Flows only without other Proposed Project components

Alternative 1 implements the Agreed Flows as in the Proposed Project, without any of the operational flexibility enabled by the Proposed Project. In terms of habitat for anadromous species, the major difference between Alternative 1 and the Baseline is the addition of adult migration flows in April and spawning flows in December in the North Coast streams with the Agreed Flows in Alternative 1; addition of adult migration flows in April in the San Lorenzo River below Tait Street; and implementation of bypass flows for adult migration and spawning in the San Lorenzo River downstream of the Felton Diversion (Table 1). Provision of the Agreed Flows, which are not included in the interim bypass flow requirements reflected in the Baseline, result in increases in habitat values in months with hydrologic exceedance conditions in the 0%-60% range, which is generally in wetter year types (see Appendix C), and improvements in the adult migration and spawning indices in the San Lorenzo River downstream of the Felton Diversion.

#### 4.5.1. Model Results – Alternative 1

*Alternative 1 with Historic Hydrology – Habitat Indices*

Alternative 1 was modeled using historical hydrology but not with climate change hydrology. The majority of Alternative 1 effects involve an improvement in habitat conditions for steelhead and coho compared to the Baseline condition (Table 5). Effects are nearly identical to the Proposed Project at all locations except Newell Creek. Improvement in habitat effects in Newell Creek downstream of Newell Creek Dam is less under Alternative 1 than under the Proposed Project or Alternatives 2 and 3. Elements of the Proposed Project add operational flexibility, which results in higher storage levels in Loch Lomond Reservoir and increased frequency and/or duration of spill (Appendix D-2). As a result of less frequent reservoir spills under Alternative 1, habitat values in Newell Creek show less improvement over the Baseline compared to the Proposed Project and Alternatives 2 and 3.

The only negative effects of Alternative 1 (relative to the Baseline) are a 2.7% decline in the rearing habitat index in wet years for coho in Laguna Creek (Figure 12a) and a 6.2% decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years (Figure 10b). The decline in Laguna Creek coho rearing habitat is a result of higher flows in April provided for adult migration under the Agreed Flows compared to no provision of migration flows in April under the interim bypass flows in the Baseline. Coho rearing habitat is at optimum levels at lower flows than those provided for adult migration. Even with this effect, the wet year coho rearing index remains at 80% of the peak level in Laguna Creek (Figure 12a). This minor effect on rearing habitat is not likely to be biologically meaningful and would not be considered “substantial” under CEQA standards of significance or meet any of the significance thresholds under CEQA (Section 4.2). Specifically, a change of this magnitude in the rearing index would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or, substantially reduce the number or restrict the range of coho.

**Table 5: Habitat effects of Alternative 1 compared to Baseline as percent change from Baseline using historical hydrology.**

| Stream Reach | | Steelhead Adult migration (m) | Steelhead Spawning/incubation (i) | Steelhead Rearing (r) | Steelhead Smolt migration (s) | Coho Adult migration (cm) | Coho Spawning/incubation (ci) | Coho Rearing (cr) | Coho Smolt migration (cs) |
|---|---|---|---|---|---|---|---|---|---|
| Laguna Anadromous | wet | 8.5% | 5.9% | o | o | o | + | -2.7% | o |
| | normal | o | 3.3% | o | o | o | + | - | o |
| | dry | o | + | o | o | o | + | - | o |
| | critically dry | o | + | o | o | o | + | o | o |
| Liddell Anadromous | wet | 4.1% | 3.4% | o | o | | | | |
| | normal | 5.0% | 3.4% | o | o | | | | |
| | dry | o | - | - | o | | | | |
| | critically dry | o | - | - | o | | | | |
| Majors Anadromous | wet | o | + | o | o | | | | |
| | normal | o | + | o | o | | | | |
| | dry | o | - | - | o | | | | |
| | critically dry | o | o | o | o | | | | |
| San Lorenzo below Tait St | wet | o | | - | o | o | | | o |
| | normal | o | | o | o | o | | | o |
| | dry | - | | o | o | o | | | o |
| | critically dry | o | | o | o | -6.2% | | | o |
| San Lorenzo below Felton | wet | + | + | - | o | 4.9% | - | - | o |
| | normal | + | + | - | o | 4.6% | - | - | o |
| | dry | 8.0% | 2.0% | o | o | 15.8% | - | ***o*** | o |
| | critically dry | 22.0% | 6.4% | o | o | 15.3% | ***+*** | ***o*** | o |
| Newell Anadromous | wet | o | + | - | o | o | + | o | o |
| | normal | o | + | - | o | o | 2.2% | o | o |
| | dry | o | 6.0% | + | o | o | 11.0% | + | o |
| | critically dry | o | 19.9% | 8.6% | o | o | 36.8% | 2.0% | o |

"-" = <2% decrease in habitat index

"+" = <2% increase in habitat index

"o" = no change in habitat index, or change of 1 day or less in migration periods

Values for coho spawning and rearing below Felton (bold italic) based on change in flow rather than habitat indices

The decline in the adult migration index for coho downstream of the Tait Diversion in Alternative 1 likely results from more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 1 in a limited number of years. Under both the Agreed Flows and the interim bypass flows (Baseline), requirements for adult migration bypass flows at the Tait Diversion can be relaxed under low storage levels in Loch Lomond Reservoir from December through March. If Alternative 1 results in more frequent Loch Lomond Reservoir storage levels below the trigger for lower migration bypass flows, bypass flows below the Tait Diversion would be modified more often (see Appendix D-2). The reason the adult migration index for coho can be reduced while the index for steelhead is not is that migration opportunities lost in December can be compensated for by gains in April for steelhead but not for coho, which migrate primarily before March. Provision of adult migration bypass flows in April under the Agreed Flows may also contribute to lower storage levels in Loch Lomond Reservoir in the early winter with Alternative 1 compared to the Baseline. The 6.2% decline in the adult coho migration index is not likely to be biologically significant since migration conditions are still suitable 80% of the time during the coho migration period in critically dry years. Migration typically takes place during higher flow periods associated with winter storms. For comparison, conditions for migration are met only about 20% of the time in the San Lorenzo River downstream of the Felton Diversion even under unimpaired conditions (i.e. no diversion at Felton). This minor effect on adult migration index is not likely to be biologically meaningful and would not be considered “substantial” under CEQA standards of significance or meet any of the thresholds for mandatory findings of significance under CEQA (Section 4.2). Specifically, the decline in the migration index would not interfere substantially with the movement of coho, substantially reduce the habitat of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in the San Lorenzo River or, substantially reduce the number or restrict the range of coho.

Effects on habitat in Laguna Creek, Liddell Creek, and Majors Creek with Alternative 1 are the same as the Proposed Project and Alternatives 2 and 3 and result from the provision of bypass flows for migration in April and spawning in December under the Agreed Flows. Habitat effects downstream of the Tait Diversion are also similar for Alternative 1, as compared to the Proposed Project and Alternatives 2 and 3 except that Alternative 1 results in a negative effect on coho adult migration in critically dry years whereas the Proposed Project does not (Table 5, Figure 10b). This is likely due to lower storage levels in Loch Lomond Reservoir in the early winter under Alternative 1 compared with the Proposed Project and resulting restrictions on migration flows under the Agreed Flows (Appendix D-2).

Habitat effects in the San Lorenzo River downstream of the Felton Diversion are similar for all Alternatives and the Proposed Project with improvements over the Baseline for adult migration and spawning, primarily in dry and critically dry years (Figure 6e, 7d, 10c). This is the result of higher bypass flows for migration and spawning under the Agreed Flows compared with the interim bypass flow requirements under the Baseline.

*Alternative 1 with Historic Hydrology – Water Temperature*

Reservoir spill under Alternative 1 is nearly identical to the Baseline. Hydrologic modeling indicates that the Alternative 1 would result in minor increase in spill from November through March and minor decrease in spill in April and May (less than 3% difference). There would be no difference between Alternative 1 and Baseline in June and no spill under either Alternative 1 or the Baseline from July through October (see Draft EIR Chapter 8, Alternatives). Increase in spill during the winter may be beneficial for migration, spawning, and smolt migration of steelhead and coho although the difference in this case is not likely to be biologically significant.  Decrease in spill during April and May may slightly reduce water temperature but is not likely to be biologically significant at the level of change involved.

At times when the reservoir is in spill and the 1 cfs fish release is not sufficient to maintain temperature in Newell Creek below 21°C, Standard Operational Practice #6 requires the City to release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam.  With the implementation of this operational practice, potential adverse water temperature effects in Newell Creek and the San Lorenzo River due to an increase in reservoir spill frequency with Alternative 1 would be avoided. Therefore, Alternative 1 would not substantially reduce the habitat of coho and steelhead, or otherwise substantially reduce the number or restrict the range of these species.

#### 4.5.2.  Evaluation for Any Significant Effects – Alternative 1

Alternative 1 has effects that are similar to those of the Proposed Project.  As with the Proposed Project, Alternative 1 incorporates Agreed Flows.  Habitat modeling indicates that, although there are isolated instances of minor effects to some life stages in some reaches relative to the Baseline, Alternative 1 would result in a net beneficial effect on both species (Table 5).  Alternative 1 does not have a substantial adverse effect on habitat indices for steelhead or coho in the project area.  The habitat modeling effects also indicate that Alternative 1 will not interfere substantially with migration of steelhead or coho. Additionally, with the implementation of Standard Operational Practice #6 as part of Alternative 1, potential adverse water temperature effects due to an increase in reservoir spill frequency would be avoided. Based on CEQA standards of significance and thresholds for mandatory findings of significance (Section 4.2), Alternative 1 is expected to have a less-than-significant impact on steelhead and coho under historic hydrologic conditions.

### 4.6.  **Alternative 2:** Agreed Flows with all Proposed Project components except changes to place of use

Alternative 2 implements the Agreed Flows similar to the Proposed Project and portions of the Proposed Project without changes to the place of use authorizing transfers to neighboring agencies or ASR outside of the area of service for the City.  In terms of habitat for anadromous species, the major difference between Alternative 2 and the Baseline is the addition of adult migration flows in April and spawning flows in December in the North Coast streams with the Agreed Flows in Alternative 2; addition of adult migration flows in April in the San Lorenzo River below Tait Street; and implementation of bypass flows for adult migration and spawning in the San Lorenzo River downstream of the Felton Diversion (Table 1). These provisions of the Agreed Flows, which are not included in the interim bypass flow requirements reflected in the Baseline, result in increases in habitat values in months with hydrologic exceedance conditions in the 0%-60% range, which is generally in wetter year types (see Appendix C), and improvements in the adult migration and spawning indices in the San Lorenzo River downstream of the Felton Diversion.

### 4.6.1. Model Results – Alternative 2

*Alternative 2 with Historic Hydrology – Habitat Indices*

Alternative 2 was modeled using historical hydrology but not with climate change hydrology. As for the Proposed Project and other Alternatives, the majority of Alternative 2 effects involve an improvement in habitat conditions for steelhead and coho compared to the Baseline condition (Table 6). Effects are nearly identical to the Proposed Project at all locations except for a slight decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years (Table 6, Figure 10b). This is most likely a result of more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 2 in early winter in a limited number of years compared to the Proposed Project (Appendix D-2, as discussed in Section 4.5.1 for Alternative 1). The 5.5% decline in the adult coho migration index is not likely to be biologically significant since migration conditions are still suitable 80% of the time during the coho migration period in dry years. Migration typically takes place during higher flow periods associated with winter storms. For comparison, conditions for migration are met only about 20% of the time in the San Lorenzo River downstream of Felton, even under unimpaired conditions (i.e. no diversion at Felton). This minor effect on adult coho migration habitat is not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the significance thresholds under CEQA (Section 4.2). Specifically, the decline in the migration index cannot be considered to interfere substantially with the movement of coho or to substantially reduce the habitat of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in the San Lorenzo River or, substantially reduce the number or restrict the range of coho.

The only other negative effect is a 2.7% decline in the rearing habitat index in wet years for coho in Laguna Creek (Table 6, Figure 12a). The decline in Laguna Creek coho rearing habitat is a result of higher flows in April provided for adult migration under the Agreed Flows compared to no provision of migration flows in April under the interim bypass flow requirements in the Baseline. Coho rearing habitat is at optimum levels at lower flows than those provided for adult migration. Even with this effect, the wet year coho rearing index remains at 80% of the peak level in Laguna Creek (Figure 12a). This minor effect on rearing habitat is not likely to be biologically meaningful and would not be considered "substantial" under CEQA standards of significance or meet any of the significance thresholds under CEQA (Section 4.2). Specifically, a change of this magnitude in the rearing index would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or, substantially reduce the number or restrict the range of coho.

Effects on habitat in Laguna Creek, Liddell Creek, and Majors Creek are the same with Alternative 2 as the Proposed Project and Alternatives 1 and 3 and result from the provision of bypass flows for migration in April and spawning flows in December under the Agreed Flows (Table 6, Figures 6a, 6b, 6c, 7a, 7b, 7c). Habitat effects in the San Lorenzo River downstream of the Felton Diversion are similar for all Alternatives and the Proposed Project with improvements over the Baseline for adult migration and spawning, primarily in dry and critically dry years (Figures 6e, 7d, 10c). This is the result of higher bypass flows for migration and spawning under the Agreed Flows compared with the interim bypass flow requirements under the Baseline.

**Table 6: Habitat effects of Alternative 2 compared to Baseline as percent change from Baseline using historical hydrology.**

| Stream Reach | | Steelhead | | | | | Coho | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Adult migration (m) | Spawning/incubation (i) | Rearing (r) | Smolt migration (s) | | Adult migration (cm) | Spawning/incubation (ci) | Rearing (cr) | Smolt migration (cs) |
| Laguna Anadromous | wet | 8.5% | 5.9% | o | o | | o | + | -2.7% | o |
| | normal | o | 3.3% | o | o | | o | + | - | o |
| | dry | o | + | o | o | | o | + | - | o |
| | critically dry | o | + | o | o | | o | + | o | o |
| Liddell Anadromous | wet | 4.1% | 3.4% | o | o | | | | | |
| | normal | 5.0% | 3.4% | o | o | | | | | |
| | dry | o | - | - | o | | | | | |
| | critically dry | o | - | - | o | | | | | |
| Majors Anadromous | wet | o | + | o | o | | | | | |
| | normal | o | + | o | o | | | | | |
| | dry | o | - | - | o | | | | | |
| | critically dry | o | o | o | o | | | | | |
| San Lorenzo below Tait St | wet | o | | - | o | | o | | | o |
| | normal | o | | - | o | | o | | | o |
| | dry | - | | - | o | | o | | | o |
| | critically dry | o | | - | o | | -5.5% | | | o |
| San Lorenzo below Felton | wet | + | + | - | o | | 4.9% | - | - | o |
| | normal | + | + | - | o | | 4.6% | - | - | o |
| | dry | 8.0% | 2.5% | o | o | | 15.8% | ***+*** | ***o*** | o |
| | critically dry | 22.0% | 5.6% | o | o | | 15.3% | - | ***o*** | o |
| Newell Anadromous | wet | 6.3% | 4.5% | + | 3.5% | | 15.4% | 5.3% | - | 3.5% |
| | normal | 17.8% | 9.6% | o | 12.4% | | 18.8% | 9.1% | - | 12.4% |
| | dry | 46.6% | 25.7% | + | 40.2% | | o | 30.1% | + | 40.2% |
| | critically dry | o | 25.3% | 8.6% | o | | o | 48.0% | 2.0% | o |

"-" = <2% decrease in habitat index

"+" = <2% increase in habitat index

"o" = no change in habitat index, or change of 1 day or less in migration periods

Values for coho spawning and rearing below Felton (bold italic) based on change in flow rather than habitat indices

Improvement in habitat effects in Newell Creek downstream of Newell Creek Dam under Alternative 2 (Table 6) is comparable to the Proposed Project (Table 3) and Alternative 3 (Table 7) and results from higher storage levels in Loch Lomond Reservoir than Baseline conditions, particularly in drier years (Appendix D-2).

*Alternative 2 with Historic Hydrology – Water Temperature*

Alternative 2 results in slightly higher reservoir elevations and more frequent spill conditions, similar to the Proposed Project. Hydrologic modeling indicates that the Alternative 2 would result in increased spill mostly in the winter and spring and infrequently during the warmer months of July and August (less than 4% of the time) (see Draft EIR Chapter 8, Alternatives). Spill in June would occur 38% of the time with the Alternative 2 compared to 19% under the Baseline. Increased spill during the winter could benefit steelhead and coho during the adult migration, spawning, and smolt migration life-stages. Increased frequency of spill in April and May with associated warmer temperatures may actually be beneficial for rearing steelhead (and coho if present) as long as the temperature is still within the suitable range. Salmonids grow faster at warmer temperatures within the suitable range with adequate food supply. Increased spill in June may also be beneficial as long as it does not result in temperature above the suitable level.

At times when the reservoir is spilling and the 1 cfs fish release is not sufficient to maintain temperature in Newell Creek below 21°C, Standard Operational Practice #6 requires the City to release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam. With the implementation of this operational practice, potential adverse water temperature effects in Newell Creek and the San Lorenzo River due to an increase in reservoir spill frequency with the Alternative 2 would be avoided. Therefore, Alternative 2 would not substantially reduce the habitat of coho and steelhead, or otherwise substantially reduce the number or restrict the range of these species.

### 4.6.2. Evaluation for Any Significant Effects – Alternative 2

Alternative 2 has effects that are similar to the Proposed Project. As with the Proposed Project, Alternative 2 incorporates Agreed Flows and includes improvements to fish screening at the Tait and Felton Diversions and improving fish passage at the Felton Diversion and as needed at the Tait Diversion. Habitat modeling indicates that, although there are isolated instances of minor effects to some life stages in some reaches relative to the Baseline, Alternative 2 would result in a net beneficial effect on both species (Table 6). Alternative 2 does not have a substantial adverse effect on habitat indices for steelhead or coho in the project area. The habitat models also indicate that Alternative 2 would not interfere substantially with migration of steelhead or coho. Additionally, with the implementation of Standard Operational Practice #6 as part of Alternative 2, potential adverse water temperature effects due to an increase in frequency of reservoir spills would be avoided. Based on CEQA standards of significance and thresholds for mandatory findings of significance (Section 4.2), Alternative 2 is expected to have a less-than-significant impact on steelhead and coho under historical hydrologic conditions.

### 4.7. **Alternative 3:** Agreed Flows with all Proposed Project components except aquifer storage and recovery

Alternative 3 implements the Agreed Flows and portions of the Proposed Project except the ASR component. In terms of habitat for anadromous species, the major difference between Alternative 2 and the Baseline is the addition of adult migration flows in April and spawning flows in December in the North Coast streams with the Agreed Flows in Alternative 2; addition of adult migration flows in April in the San Lorenzo River below Tait Street; and implementation of bypass flows for adult migration and spawning in the San Lorenzo River downstream of the Felton Diversion (Table 1). These provisions of the Agreed Flows, which are not included in the interim bypass flow requirements reflected in the Baseline, result in increases in habitat values in months with hydrologic exceedance conditions in the 0%-60% range, which is generally in wetter year types (see Appendix C). There is also improvement in adult migration and spawning habitat indices in the San Lorenzo River downstream of the Felton Diversion.

#### 4.7.1. Model Results – Alternative 3

*Alternative 3 with Historic Hydrology – Habitat Indices*

Alternative 3 was modeled using historical hydrology but not with climate change hydrology. As with the Proposed Project and other Alternatives, the majority of effects of Alternative 3 involve an improvement in habitat conditions for steelhead and coho compared to the Baseline condition (Table 7). Effects are nearly identical to the Proposed Project at all locations except for a slight decline in the adult migration index for coho downstream of the Tait Diversion in critically dry years (Table 7, Figure 10b). This is most likely a result of more frequent restrictions on migration bypass flows due to lower storage levels in Loch Lomond Reservoir under Alternative 3 in early winter in a limited number of years compared to the Proposed Project (Appendix D-2). The 4.2% decline in the adult coho migration index is not likely to be biologically significant since migration conditions are still suitable 80% of the time during the coho migration period in dry years. Migration typically takes place during higher flow periods associated with winter storms. For comparison, conditions for migration are met only about 20% of the time in the San Lorenzo River downstream of Felton, even under unimpaired conditions (i.e. no diversion at Felton). This minor effect on adult coho migration habitat is not likely to be biologically meaningful and would not be considered “substantial” under CEQA standards of significance or meet any of the significance thresholds under CEQA (Section 4.2). Specifically, the decline in the migration index cannot be considered to interfere substantially with the movement of coho or to substantially reduce the habitat of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in the San Lorenzo River or, substantially reduce the number or restrict the range of coho.

The only other negative effect is a 2.7% decline in the rearing habitat index in wet years for coho in Laguna Creek (Table 7, Figure 12a). The decline in Laguna Creek coho rearing habitat is a result of higher flows in April provided for adult migration under the Agreed Flows compared to no provision of migration flows in April under the tolling flows in the Baseline. Coho rearing habitat is at optimum levels at lower flows than those provided for adult migration. Even with this effect, the wet year coho rearing index remains at 80% of the peak level in Laguna Creek (Figure 12a). This minor effect on rearing habitat is not likely to be biologically meaningful and would not be considered “substantial” under CEQA standards of significance or meet any of the thresholds for mandatory findings of significance under CEQA (Section 4.2). Specifically, a change of this magnitude in the rearing index would not substantially reduce the habitat of coho, interfere substantially with the movement or migration of coho, cause the coho population to drop below self-sustaining levels, threaten to eliminate coho in Laguna Creek or, substantially reduce the number or restrict the range of coho.

**Table 7: Habitat effects of Alternative 3 compared to Baseline as percent change from Baseline using historical hydrology.**

| Stream Reach | | Steelhead | | | | Coho | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Adult migration (m) | Spawning/incubation (i) | Rearing (r) | Smolt migration (s) | Adult migration (cm) | Spawning/incubation (ci) | Rearing (cr) | Smolt migration (cs) |
| Laguna Anadromous | wet | 8.5% | 5.9% | o | o | o | + | -2.7% | o |
| | normal | o | 3.3% | o | o | o | + | - | o |
| | dry | o | + | o | o | o | + | - | o |
| | critically dry | o | + | o | o | o | + | o | o |
| Liddell Anadromous | wet | 4.1% | 3.4% | o | o | | | | |
| | normal | 5.0% | 3.4% | o | o | | | | |
| | dry | o | - | - | o | | | | |
| | critically dry | o | - | - | o | | | | |
| Majors Anadromous | wet | o | + | o | o | | | | |
| | normal | o | + | o | o | | | | |
| | dry | o | - | - | o | | | | |
| | critically dry | o | o | o | o | | | | |
| San Lorenzo below Tait St | wet | o | | - | o | o | | | o |
| | normal | o | | - | o | o | | | o |
| | dry | - | | - | o | o | | | o |
| | critically dry | o | | - | o | -4.2% | | | o |
| San Lorenzo below Felton | wet | + | + | - | o | 4.9% | - | - | o |
| | normal | + | + | - | o | 4.6% | - | - | o |
| | dry | 8.0% | 2.2% | o | o | 15.8% | - | ***o*** | o |
| | critically dry | 22.0% | 5.1% | o | o | 15.3% | - | ***o*** | o |
| Newell Anadromous | wet | 4.3% | 3.1% | + | 2.5% | 9.4% | 3.4% | - | 2.5% |
| | normal | 13.7% | 7.7% | o | 9.4% | 12.8% | 7.2% | - | 9.4% |
| | dry | 34.0% | 21.1% | + | 31.7% | o | 25.4% | + | 31.7% |
| | critically dry | o | 24.0% | 8.6% | o | o | 44.0% | 2.0% | o |

"-" = <2% decrease in habitat index
"+" = <2% increase in habitat index
"o" = no change in habitat index, or change of 1 day or less in migration periods
Values for coho spawning and rearing below Felton (bold italic) based on change in flow rather than habitat indices

Effects on habitat in Laguna Creek, Liddell Creek, and Majors Creek with Alternative 3 are the same as the Proposed Project and Alternatives 1 and 2 and result from the provision of bypass flows for migration in April and spawning flows in December under the Agreed Flows (Table 7, Figures 6a, 6b, 6c, 7a, 7b, 7c). Habitat effects in the San Lorenzo River downstream of the Felton Diversion are similar for all Alternatives and the Proposed Project with improvements over the Baseline for adult migration and spawning, primarily in dry and critically dry years (Table 7, Figures 6e, 7d, 10c). This is the result of higher bypass flows for migration and spawning under the Agreed Flows compared with the interim bypass flow requirements under the Baseline.

Improvement in habitat effects in Newell Creek downstream of Newell Creek Dam under Alternative 3 (Table 7) is comparable to the Proposed Project (Table 3) and Alternative 2 (Table 6) and results from higher storage levels in Loch Lomond Reservoir than Baseline conditions, particularly in drier years (Appendix D-2).

*Alternative 3 with Historic Hydrology – Water Temperature*

Alternative 3 is similar to the Proposed Project and Alternative 2 in that it results in slightly higher reservoir elevations and more frequent spill conditions. Hydrologic modeling indicates that the Alternative 3 would result in increased spill mostly in the winter and spring and infrequently during the warmer months of July and August (less than 4% of the time) (see Chapter 8, Alternatives). Spill in June would occur 38% of the time with the Alternative 3 compared to 19% under the Baseline. Increased spill during the winter could benefit steelhead and coho during the adult migration, spawning, and smolt migration life-stages. Increased frequency of spill in April and May with associated warmer temperatures may actually be beneficial for rearing steelhead (and coho if present) as long as the temperature is still within the suitable range. Salmonids grow faster at warmer temperatures within the suitable range with adequate food supply. Increased spill in June may also be beneficial as long as it does not result in temperature above the suitable level.

At times when the reservoir is spilling and the 1 cfs fish release is not sufficient to maintain temperature in Newell Creek below 21°C, Operational Practice #6 requires the City to release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam. With the implementation of this operational practice, potential adverse water temperature effects in Newell Creek and San Lorenzo River due to an increase in reservoir spill frequency with Alternative 3 would be avoided. Therefore, Alternative 3 would not substantially reduce the habitat of coho and steelhead, or otherwise substantially reduce the number or restrict the range of these species.

#### 4.7.2. Evaluation for Any Significant Effects – Alternative 3

Alternative 3 has effects that are similar to those of the Proposed Project. As with the Proposed Project, Alternative 3 incorporates Agreed Flows and includes improvements to fish screening at the Tait and Felton Diversions and improving fish passage at the Felton Diversion and as needed at the Tait Diversion. Habitat modeling indicates that, although there are isolated instances of minor effects to some life stages in some reaches relative to the Baseline, Alternative 3 would result in a net beneficial effect on both species (Table 7). Alternative 3 does not have a substantial adverse effect on habitat indices for steelhead or coho in the project area. The habitat modeling effects also indicate that Alternative 3 will not interfere substantially with migration of steelhead or coho under historical hydrology. Additionally, with the implementation of Standard Operational Practice #6 as part of Alternative 3, potential adverse water temperature effects due to an increase in reservoir spill frequency would be avoided. Based on CEQA standards of significance and thresholds for mandatory findings of significance (Section 4.2), Alternative 3 is expected to have a less-than-significant impact on steelhead and coho under historic hydrologic conditions.

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# Appendix E

## Air Quality and Greenhouse Gas Emissions Calculations

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# Table of Contents

# SCWR - Beltz 8 Construction

**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.40 | 1000sqft | 0.01 | 396.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 8 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 14 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default coating EF

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 30.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | AcresOfGrading | 2.50 | 0.00 |
| tblGrading | MaterialExported | 0.00 | 14.00 |
| tblLandUse | LandUseSquareFeet | 400.00 | 396.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
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| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
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| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
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| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Tank foundation |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
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| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
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| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
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| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
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| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
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| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0332 | 0.3119 | 0.3459 | 6.4000e-004 | 6.2400e-003 | 0.0148 | 0.0211 | 1.6400e-003 | 0.0141 | 0.0158 | 0.0000 | 56.1796 | 56.1796 | 0.0102 | 0.0000 | 56.4350 |
| 2023 | 2.1700e-003 | 0.0218 | 0.0260 | 4.0000e-005 | 1.5000e-004 | 1.0500e-003 | 1.2000e-003 | 4.0000e-005 | 9.6000e-004 | 1.0000e-003 | 0.0000 | 3.8142 | 3.8142 | 1.1700e-003 | 0.0000 | 3.8435 |
| **Maximum** | **0.0332** | **0.3119** | **0.3459** | **6.4000e-004** | **6.2400e-003** | **0.0148** | **0.0211** | **1.6400e-003** | **0.0141** | **0.0158** | **0.0000** | **56.1796** | **56.1796** | **0.0102** | **0.0000** | **56.4350** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0332 | 0.3119 | 0.3459 | 6.4000e-004 | 6.2300e-003 | 0.0148 | 0.0211 | 1.6400e-003 | 0.0141 | 0.0158 | 0.0000 | 56.1796 | 56.1796 | 0.0102 | 0.0000 | 56.4349 |
| 2023 | 2.1700e-003 | 0.0218 | 0.0260 | 4.0000e-005 | 1.5000e-004 | 1.0500e-003 | 1.2000e-003 | 4.0000e-005 | 9.6000e-004 | 1.0000e-003 | 0.0000 | 3.8142 | 3.8142 | 1.1700e-003 | 0.0000 | 3.8434 |
| **Maximum** | **0.0332** | **0.3119** | **0.3459** | **6.4000e-004** | **6.2300e-003** | **0.0148** | **0.0211** | **1.6400e-003** | **0.0141** | **0.0158** | **0.0000** | **56.1796** | **56.1796** | **0.0102** | **0.0000** | **56.4349** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.16** | **0.00** | **0.04** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| **Quarter** | **Start Date** | **End Date** | **Maximum Unmitigated ROG + NOX (tons/quarter)** | **Maximum Mitigated ROG + NOX (tons/quarter)** |
|---|---|---|---|---|
| **1** | **9-12-2022** | **12-11-2022** | 0.2499 | 0.2499 |
| **2** | **12-12-2022** | **3-11-2023** | 0.0705 | 0.0705 |
| | | **Highest** | 0.2499 | 0.2499 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **3.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 9/12/2022 | 9/16/2022 | 5 | 5 | |
| 2 | Injection line and conduit and storm drain connection | Trenching | 9/19/2022 | 10/7/2022 | 5 | 15 | |
| 3 | Tank foundation | Grading | 10/10/2022 | 10/14/2022 | 5 | 5 | |
| 4 | Tank construction | Building Construction | 10/17/2022 | 11/25/2022 | 5 | 30 | |
| 5 | Wellhead piping | Building Construction | 11/28/2022 | 12/2/2022 | 5 | 5 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | Building equipment upgrades | Building Construction | 12/5/2022 | 12/23/2022 | 5 | 15 | |
| 7 | Facility startup and testing | Building Construction | 12/26/2022 | 12/30/2022 | 5 | 5 | |
| 8 | Final paving and demobilization | Building Construction | 1/2/2023 | 1/6/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Injection line and conduit and storm drain connection | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit and storm drain connection | Excavators | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit and storm drain connection | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit and storm drain connection | Pumps | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit and storm drain connection | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Tank foundation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Tank foundation | Graders | 1 | 8.00 | 187 | 0.41 |
| Tank foundation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Tank foundation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Tank construction | Cranes | 1 | 4.00 | 231 | 0.29 |
| Tank construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Tank construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Tank construction | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead piping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Building equipment upgrades | Cranes | 0 | 0.00 | 231 | 0.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Building equipment upgrades | Excavators | 1 | 8.00 | 158 | 0.38 |
| Building equipment upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building equipment upgrades | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building equipment upgrades | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit and storm drain | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank foundation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building equipment upgrades | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.4500e-003 | 0.0173 | 9.9000e-003 | 2.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.1376 | 2.1376 | 6.9000e-004 | 0.0000 | 2.1549 |
| **Total** | **1.4500e-003** | **0.0173** | **9.9000e-003** | **2.0000e-005** | **0.0000** | **6.4000e-004** | **6.4000e-004** | **0.0000** | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.1376** | **2.1376** | **6.9000e-004** | **0.0000** | **2.1549** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.4500e-003 | 0.0173 | 9.9000e-003 | 2.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.1376 | 2.1376 | 6.9000e-004 | 0.0000 | 2.1549 |
| **Total** | **1.4500e-003** | **0.0173** | **9.9000e-003** | **2.0000e-005** | **0.0000** | **6.4000e-004** | **6.4000e-004** | **0.0000** | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.1376** | **2.1376** | **6.9000e-004** | **0.0000** | **2.1549** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## 3.3 Injection line and conduit and storm drain connection -

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.9300e-003 | 0.0771 | 0.1053 | 1.7000e-004 | | 4.1400e-003 | 4.1400e-003 | | 3.9900e-003 | 3.9900e-003 | 0.0000 | 14.7303 | 14.7303 | 2.5300e-003 | 0.0000 | 14.7934 |
| **Total** | **8.9300e-003** | **0.0771** | **0.1053** | **1.7000e-004** | | **4.1400e-003** | **4.1400e-003** | | **3.9900e-003** | **3.9900e-003** | **0.0000** | **14.7303** | **14.7303** | **2.5300e-003** | **0.0000** | **14.7934** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.9000e-004 | 7.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0768 | 0.0768 | 0.0000 | 0.0000 | 0.0769 |
| Vendor | 1.0000e-004 | 3.4800e-003 | 9.0000e-004 | 1.0000e-005 | 2.0000e-004 | 1.0000e-005 | 2.1000e-004 | 6.0000e-005 | 1.0000e-005 | 7.0000e-005 | 0.0000 | 0.7701 | 0.7701 | 3.0000e-005 | 0.0000 | 0.7709 |
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **3.5000e-004** | **3.9700e-003** | **2.8100e-003** | **1.0000e-005** | **6.9000e-004** | **1.0000e-005** | **7.1000e-004** | **1.9000e-004** | **1.0000e-005** | **2.1000e-004** | **0.0000** | **1.2582** | **1.2582** | **5.0000e-005** | **0.0000** | **1.2594** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.9300e-003 | 0.0771 | 0.1053 | 1.7000e-004 | | 4.1400e-003 | 4.1400e-003 | | 3.9900e-003 | 3.9900e-003 | 0.0000 | 14.7303 | 14.7303 | 2.5300e-003 | 0.0000 | 14.7934 |
| **Total** | **8.9300e-003** | **0.0771** | **0.1053** | **1.7000e-004** | | **4.1400e-003** | **4.1400e-003** | | **3.9900e-003** | **3.9900e-003** | **0.0000** | **14.7303** | **14.7303** | **2.5300e-003** | **0.0000** | **14.7934** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 1.0000e-005 | 2.9000e-004 | 7.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0768 | 0.0768 | 0.0000 | 0.0000 | 0.0769 |
| Vendor | 1.0000e-004 | 3.4800e-003 | 9.0000e-004 | 1.0000e-005 | 2.0000e-004 | 1.0000e-005 | 2.1000e-004 | 6.0000e-005 | 1.0000e-005 | 7.0000e-005 | 0.0000 | 0.7701 | 0.7701 | 3.0000e-005 | 0.0000 | 0.7709 |
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **3.5000e-004** | **3.9700e-003** | **2.8100e-003** | **1.0000e-005** | **6.9000e-004** | **1.0000e-005** | **7.1000e-004** | **1.9000e-004** | **1.0000e-005** | **2.1000e-004** | **0.0000** | **1.2582** | **1.2582** | **5.0000e-005** | **0.0000** | **1.2594** |

## 3.4 Tank foundation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.4500e-003 | 0.0173 | 9.9000e-003 | 2.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.1376 | 2.1376 | 6.9000e-004 | 0.0000 | 2.1549 |
| **Total** | **1.4500e-003** | **0.0173** | **9.9000e-003** | **2.0000e-005** | **1.0000e-005** | **6.4000e-004** | **6.5000e-004** | **0.0000** | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.1376** | **2.1376** | **6.9000e-004** | **0.0000** | **2.1549** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.4500e-003 | 0.0173 | 9.9000e-003 | 2.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.1376 | 2.1376 | 6.9000e-004 | 0.0000 | 2.1549 |
| **Total** | **1.4500e-003** | **0.0173** | **9.9000e-003** | **2.0000e-005** | **0.0000** | **6.4000e-004** | **6.4000e-004** | **0.0000** | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.1376** | **2.1376** | **6.9000e-004** | **0.0000** | **2.1549** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## 3.5 Tank construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 9.4500e-003 | 0.0911 | 0.0866 | 1.6000e-004 | | 4.5500e-003 | 4.5500e-003 | | 4.3700e-003 | 4.3700e-003 | 0.0000 | 14.2947 | 14.2947 | 2.2800e-003 | 0.0000 | 14.3518 |
| **Total** | **9.4500e-003** | **0.0911** | **0.0866** | **1.6000e-004** | | **4.5500e-003** | **4.5500e-003** | | **4.3700e-003** | **4.3700e-003** | **0.0000** | **14.2947** | **14.2947** | **2.2800e-003** | **0.0000** | **14.3518** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-004 | 6.9500e-003 | 1.7900e-003 | 2.0000e-005 | 6.7000e-004 | 2.0000e-005 | 6.9000e-004 | 1.8000e-004 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 1.5402 | 1.5402 | 6.0000e-005 | 0.0000 | 1.5417 |
| Worker | 9.4000e-004 | 8.0000e-004 | 7.3500e-003 | 2.0000e-005 | 3.5400e-003 | 2.0000e-005 | 3.5600e-003 | 9.1000e-004 | 1.0000e-005 | 9.2000e-004 | 0.0000 | 1.6451 | 1.6451 | 6.0000e-005 | 0.0000 | 1.6466 |
| **Total** | **1.1400e-003** | **7.7500e-003** | **9.1400e-003** | **4.0000e-005** | **4.2100e-003** | **4.0000e-005** | **4.2500e-003** | **1.0900e-003** | **3.0000e-005** | **1.1200e-003** | **0.0000** | **3.1853** | **3.1853** | **1.2000e-004** | **0.0000** | **3.1883** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 9.4500e-003 | 0.0911 | 0.0866 | 1.6000e-004 | | 4.5500e-003 | 4.5500e-003 | | 4.3700e-003 | 4.3700e-003 | 0.0000 | 14.2947 | 14.2947 | 2.2800e-003 | 0.0000 | 14.3518 |
| **Total** | **9.4500e-003** | **0.0911** | **0.0866** | **1.6000e-004** | | **4.5500e-003** | **4.5500e-003** | | **4.3700e-003** | **4.3700e-003** | **0.0000** | **14.2947** | **14.2947** | **2.2800e-003** | **0.0000** | **14.3518** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-004 | 6.9500e-003 | 1.7900e-003 | 2.0000e-005 | 6.7000e-004 | 2.0000e-005 | 6.9000e-004 | 1.8000e-004 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 1.5402 | 1.5402 | 6.0000e-005 | 0.0000 | 1.5417 |
| Worker | 9.4000e-004 | 8.0000e-004 | 7.3500e-003 | 2.0000e-005 | 3.5400e-003 | 2.0000e-005 | 3.5600e-003 | 9.1000e-004 | 1.0000e-005 | 9.2000e-004 | 0.0000 | 1.6451 | 1.6451 | 6.0000e-005 | 0.0000 | 1.6466 |
| **Total** | **1.1400e-003** | **7.7500e-003** | **9.1400e-003** | **4.0000e-005** | **4.2100e-003** | **4.0000e-005** | **4.2500e-003** | **1.0900e-003** | **3.0000e-005** | **1.1200e-003** | **0.0000** | **3.1853** | **3.1853** | **1.2000e-004** | **0.0000** | **3.1883** |

## 3.6 Wellhead piping - 2022

## Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5800e-003 | 0.0152 | 0.0144 | 3.0000e-005 | | 7.6000e-004 | 7.6000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.3825 | 2.3825 | 3.8000e-004 | 0.0000 | 2.3920 |
| **Total** | **1.5800e-003** | **0.0152** | **0.0144** | **3.0000e-005** | | **7.6000e-004** | **7.6000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.3825** | **2.3825** | **3.8000e-004** | **0.0000** | **2.3920** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5800e-003 | 0.0152 | 0.0144 | 3.0000e-005 | | 7.6000e-004 | 7.6000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.3825 | 2.3825 | 3.8000e-004 | 0.0000 | 2.3920 |
| **Total** | **1.5800e-003** | **0.0152** | **0.0144** | **3.0000e-005** | | **7.6000e-004** | **7.6000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.3825** | **2.3825** | **3.8000e-004** | **0.0000** | **2.3920** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |

| Total | 1.0000e-004 | 6.5000e-004 | 7.6000e-004 | 0.0000 | 1.9000e-004 | 0.0000 | 1.9000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.2654 | 0.2654 | 1.0000e-005 | 0.0000 | 0.2657 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 3.7 Building equipment upgrades - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.6300e-003 | 0.0607 | 0.0860 | 1.3000e-004 | | 3.1600e-003 | 3.1600e-003 | | 3.0000e-003 | 3.0000e-003 | 0.0000 | 11.7403 | 11.7403 | 2.6400e-003 | 0.0000 | 11.8064 |
| **Total** | **6.6300e-003** | **0.0607** | **0.0860** | **1.3000e-004** | | **3.1600e-003** | **3.1600e-003** | | **3.0000e-003** | **3.0000e-003** | **0.0000** | **11.7403** | **11.7403** | **2.6400e-003** | **0.0000** | **11.8064** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 5.9000e-004 | 1.4000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1536 | 0.1536 | 1.0000e-005 | 0.0000 | 0.1537 |
| Vendor | 5.0000e-005 | 1.7400e-003 | 4.5000e-004 | 0.0000 | 1.0000e-004 | 1.0000e-005 | 1.0000e-004 | 3.0000e-005 | 1.0000e-005 | 3.0000e-005 | 0.0000 | 0.3851 | 0.3851 | 1.0000e-005 | 0.0000 | 0.3854 |
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **3.0000e-004** | **2.5300e-003** | **2.4300e-003** | **0.0000** | **6.0000e-004** | **1.0000e-005** | **6.2000e-004** | **1.7000e-004** | **1.0000e-005** | **1.7000e-004** | **0.0000** | **0.9499** | **0.9499** | **4.0000e-005** | **0.0000** | **0.9508** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.6300e-003 | 0.0607 | 0.0860 | 1.3000e-004 | | 3.1600e-003 | 3.1600e-003 | | 3.0000e-003 | 3.0000e-003 | 0.0000 | 11.7403 | 11.7403 | 2.6400e-003 | 0.0000 | 11.8063 |
| **Total** | **6.6300e-003** | **0.0607** | **0.0860** | **1.3000e-004** | | **3.1600e-003** | **3.1600e-003** | | **3.0000e-003** | **3.0000e-003** | **0.0000** | **11.7403** | **11.7403** | **2.6400e-003** | **0.0000** | **11.8063** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 5.9000e-004 | 1.4000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1536 | 0.1536 | 1.0000e-005 | 0.0000 | 0.1537 |
| Vendor | 5.0000e-005 | 1.7400e-003 | 4.5000e-004 | 0.0000 | 1.0000e-004 | 1.0000e-005 | 1.0000e-004 | 3.0000e-005 | 1.0000e-005 | 3.0000e-005 | 0.0000 | 0.3851 | 0.3851 | 1.0000e-005 | 0.0000 | 0.3854 |
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **3.0000e-004** | **2.5300e-003** | **2.4300e-003** | **0.0000** | **6.0000e-004** | **1.0000e-005** | **6.2000e-004** | **1.7000e-004** | **1.0000e-005** | **1.7000e-004** | **0.0000** | **0.9499** | **0.9499** | **4.0000e-005** | **0.0000** | **0.9508** |

## 3.8 Facility startup and testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5700e-003 | 0.0163 | 0.0164 | 3.0000e-005 | | 8.4000e-004 | 8.4000e-004 | | 7.8000e-004 | 7.8000e-004 | 0.0000 | 2.3358 | 2.3358 | 7.6000e-004 | 0.0000 | 2.3547 |
| **Total** | **1.5700e-003** | **0.0163** | **0.0164** | **3.0000e-005** | | **8.4000e-004** | **8.4000e-004** | | **7.8000e-004** | **7.8000e-004** | **0.0000** | **2.3358** | **2.3358** | **7.6000e-004** | **0.0000** | **2.3547** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **8.0000e-005** | **6.3000e-004** | **6.1000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2312** | **0.2312** | **0.0000** | **0.0000** | **0.2314** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5700e-003 | 0.0163 | 0.0164 | 3.0000e-005 | | 8.4000e-004 | 8.4000e-004 | | 7.8000e-004 | 7.8000e-004 | 0.0000 | 2.3358 | 2.3358 | 7.6000e-004 | 0.0000 | 2.3547 |
| **Total** | **1.5700e-003** | **0.0163** | **0.0164** | **3.0000e-005** | | **8.4000e-004** | **8.4000e-004** | | **7.8000e-004** | **7.8000e-004** | **0.0000** | **2.3358** | **2.3358** | **7.6000e-004** | **0.0000** | **2.3547** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **8.0000e-005** | **6.3000e-004** | **6.1000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2312** | **0.2312** | **0.0000** | **0.0000** | **0.2314** |

## 3.9 Final paving and demobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.1000e-003 | 0.0212 | 0.0254 | 4.0000e-005 | | 1.0500e-003 | 1.0500e-003 | | 9.6000e-004 | 9.6000e-004 | 0.0000 | 3.5890 | 3.5890 | 1.1600e-003 | 0.0000 | 3.6180 |
| **Total** | **2.1000e-003** | **0.0212** | **0.0254** | **4.0000e-005** | | **1.0500e-003** | **1.0500e-003** | | **9.6000e-004** | **9.6000e-004** | **0.0000** | **3.5890** | **3.5890** | **1.1600e-003** | **0.0000** | **3.6180** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.1000e-003 | 0.0212 | 0.0254 | 4.0000e-005 | | 1.0500e-003 | 1.0500e-003 | | 9.6000e-004 | 9.6000e-004 | 0.0000 | 3.5890 | 3.5890 | 1.1600e-003 | 0.0000 | 3.6180 |
| **Total** | **2.1000e-003** | **0.0212** | **0.0254** | **4.0000e-005** | | **1.0500e-003** | **1.0500e-003** | | **9.6000e-004** | **9.6000e-004** | **0.0000** | **3.5890** | **3.5890** | **1.1600e-003** | **0.0000** | **3.6180** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 3.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Unmitigated | 3.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 3.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **4.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 3.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **4.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |

| | | | | |
|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 8 Construction

**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.40 | 1000sqft | 0.01 | 396.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 8 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 14 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default coating EF

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 30.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | AcresOfGrading | 2.50 | 0.00 |
| tblGrading | MaterialExported | 0.00 | 14.00 |
| tblLandUse | LandUseSquareFeet | 400.00 | 396.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Tank foundation |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 1.2350 | 10.7977 | 14.4179 | 0.0245 | 0.2919 | 0.5538 | 0.6488 | 0.0754 | 0.5340 | 0.5598 | 0.0000 | 2,353.9335 | 2,353.9335 | 0.3937 | 0.0000 | 2,363.3874 |
| 2023 | 0.8659 | 8.6957 | 10.3953 | 0.0173 | 0.0628 | 0.4189 | 0.4817 | 0.0170 | 0.3854 | 0.4024 | 0.0000 | 1,684.4211 | 1,684.4211 | 0.5153 | 0.0000 | 1,697.3034 |
| **Maximum** | **1.2350** | **10.7977** | **14.4179** | **0.0245** | **0.2919** | **0.5538** | **0.6488** | **0.0754** | **0.5340** | **0.5598** | **0.0000** | **2,353.9335** | **2,353.9335** | **0.5153** | **0.0000** | **2,363.3874** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | | | | | | lb/day | | | | | | | lb/day | | | |
| 2022 | 1.2350 | 10.7977 | 14.4179 | 0.0245 | 0.2919 | 0.5538 | 0.6488 | 0.0754 | 0.5340 | 0.5598 | 0.0000 | 2,353.933 5 | 2,353.9335 | 0.3937 | 0.0000 | 2,363.387 4 |
| 2023 | 0.8659 | 8.6957 | 10.3953 | 0.0173 | 0.0628 | 0.4189 | 0.4817 | 0.0170 | 0.3854 | 0.4024 | 0.0000 | 1,684.421 1 | 1,684.4211 | 0.5153 | 0.0000 | 1,697.303 4 |
| **Maximum** | **1.2350** | **10.7977** | **14.4179** | **0.0245** | **0.2919** | **0.5538** | **0.6488** | **0.0754** | **0.5340** | **0.5598** | **0.0000** | **2,353.933 5** | **2,353.9335** | **0.5153** | **0.0000** | **2,363.387 4** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |
| Area | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 9/12/2022 | 9/16/2022 | 5 | 5 | |
| 2 | Injection line and conduit and storm drain connection | Trenching | 9/19/2022 | 10/7/2022 | 5 | 15 | |
| 3 | Tank foundation | Grading | 10/10/2022 | 10/14/2022 | 5 | 5 | |
| 4 | Tank construction | Building Construction | 10/17/2022 | 11/25/2022 | 5 | 30 | |
| 5 | Wellhead piping | Building Construction | 11/28/2022 | 12/2/2022 | 5 | 5 | |
| 6 | Building equipment upgrades | Building Construction | 12/5/2022 | 12/23/2022 | 5 | 15 | |
| 7 | Facility startup and testing | Building Construction | 12/26/2022 | 12/30/2022 | 5 | 5 | |
| 8 | Final paving and demobilization | Building Construction | 1/2/2023 | 1/6/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Injection line and conduit and storm drain connection | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit and storm drain connection | Excavators | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit and storm drain connection | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit and storm drain connection | Pumps | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit and storm drain connection | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Tank foundation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Tank foundation | Graders | 1 | 8.00 | 187 | 0.41 |
| Tank foundation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Tank foundation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Tank construction | Cranes | 1 | 4.00 | 231 | 0.29 |
| Tank construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Tank construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Tank construction | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead piping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Building equipment upgrades | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building equipment upgrades | Excavators | 1 | 8.00 | 158 | 0.38 |
| Building equipment upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building equipment upgrades | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building equipment upgrades | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |

| | | | | | |
|---|---|---|---|---|---|
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit and storm drain | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank foundation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building equipment upgrades | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **0.0000** | **0.2573** | **0.2573** | **0.0000** | **0.2367** | **0.2367** | | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | 0.0000 | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **0.0000** | **0.2573** | **0.2573** | **0.0000** | **0.2367** | **0.2367** | **0.0000** | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.3 Injection line and conduit and storm drain connection -

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1904 | 10.2775 | 14.0433 | 0.0226 | | 0.5518 | 0.5518 | | 0.5321 | 0.5321 | | 2,164.9843 | 2,164.9843 | 0.3711 | | 2,174.2628 |
| **Total** | **1.1904** | **10.2775** | **14.0433** | **0.0226** | | **0.5518** | **0.5518** | | **0.5321** | **0.5321** | | **2,164.9843** | **2,164.9843** | **0.3711** | | **2,174.2628** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 9.5000e-004 | 0.0383 | 8.8200e-003 | 1.1000e-004 | 2.3100e-003 | 1.4000e-004 | 2.4500e-003 | 6.3000e-004 | 1.4000e-004 | 7.7000e-004 | | 11.3509 | 11.3509 | 4.5000e-004 | | 11.3622 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0446** | **0.5202** | **0.3746** | **1.8300e-003** | **0.0950** | **2.0300e-003** | **0.0970** | **0.0258** | **1.9300e-003** | **0.0277** | | **188.9492** | **188.9492** | **7.0100e-003** | | **189.1246** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1904 | 10.2775 | 14.0433 | 0.0226 | | 0.5518 | 0.5518 | | 0.5321 | 0.5321 | 0.0000 | 2,164.9843 | 2,164.9843 | 0.3711 | | 2,174.2628 |
| **Total** | **1.1904** | **10.2775** | **14.0433** | **0.0226** | | **0.5518** | **0.5518** | | **0.5321** | **0.5321** | **0.0000** | **2,164.9843** | **2,164.9843** | **0.3711** | | **2,174.2628** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 9.5000e-004 | 0.0383 | 8.8200e-003 | 1.1000e-004 | 2.3100e-003 | 1.4000e-004 | 2.4500e-003 | 6.3000e-004 | 1.4000e-004 | 7.7000e-004 | | 11.3509 | 11.3509 | 4.5000e-004 | | 11.3622 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0446** | **0.5202** | **0.3746** | **1.8300e-003** | **0.0950** | **2.0300e-003** | **0.0970** | **0.0258** | **1.9300e-003** | **0.0277** | | **188.9492** | **188.9492** | **7.0100e-003** | | **189.1246** |

## 3.4 Tank foundation - 2022

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3600e-003 | 0.0000 | 2.3600e-003 | 2.7000e-004 | 0.0000 | 2.7000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **2.3600e-003** | **0.2573** | **0.2597** | **2.7000e-004** | **0.2367** | **0.2370** | | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0600e-003 | 0.0000 | 1.0600e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | 0.0000 | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **1.0600e-003** | **0.2573** | **0.2584** | **1.2000e-004** | **0.2367** | **0.2369** | **0.0000** | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.5 Tank construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0463 | 1.3700e-003 | 0.0476 | 0.0125 | 1.3100e-003 | 0.0138 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0619 | 0.0467 | 0.5065 | 1.2700e-003 | 0.2457 | 1.0400e-003 | 0.2467 | 0.0629 | 9.6000e-004 | 0.0639 | | 126.7732 | 126.7732 | 4.6000e-003 | | 126.8882 |
| **Total** | **0.0746** | **0.5052** | **0.6190** | **2.3500e-003** | **0.2919** | **2.4100e-003** | **0.2943** | **0.0754** | **2.2700e-003** | **0.0777** | | **240.9849** | **240.9849** | **8.8600e-003** | | **241.2065** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0463 | 1.3700e-003 | 0.0476 | 0.0125 | 1.3100e-003 | 0.0138 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0619 | 0.0467 | 0.5065 | 1.2700e-003 | 0.2457 | 1.0400e-003 | 0.2467 | 0.0629 | 9.6000e-004 | 0.0639 | | 126.7732 | 126.7732 | 4.6000e-003 | | 126.8882 |
| **Total** | **0.0746** | **0.5052** | **0.6190** | **2.3500e-003** | **0.2919** | **2.4100e-003** | **0.2943** | **0.0754** | **2.2700e-003** | **0.0777** | | **240.9849** | **240.9849** | **8.8600e-003** | | **241.2065** |

## 3.6 Wellhead piping - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.7 Building equipment upgrades - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.8838 | 8.0971 | 11.4629 | 0.0180 | | 0.4218 | 0.4218 | | 0.4005 | 0.4005 | | 1,725.5277 | 1,725.5277 | 0.3884 | | 1,735.2368 |
| **Total** | **0.8838** | **8.0971** | **11.4629** | **0.0180** | | **0.4218** | **0.4218** | | **0.4005** | **0.4005** | | **1,725.5277** | **1,725.5277** | **0.3884** | | **1,735.2368** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.8900e-003 | 0.0767 | 0.0176 | 2.1000e-004 | 4.6200e-003 | 2.9000e-004 | 4.9100e-003 | 1.2600e-003 | 2.8000e-004 | 1.5400e-003 | | 22.7019 | 22.7019 | 9.0000e-004 | | 22.7244 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0392** | **0.3293** | **0.3271** | **1.3900e-003** | **0.0838** | **1.4900e-003** | **0.0853** | **0.0226** | **1.4100e-003** | **0.0240** | | **143.1943** | **143.1943** | **5.3300e-003** | | **143.3277** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8838 | 8.0971 | 11.4629 | 0.0180 | | 0.4218 | 0.4218 | | 0.4005 | 0.4005 | 0.0000 | 1,725.5277 | 1,725.5277 | 0.3884 | | 1,735.2368 |
| **Total** | **0.8838** | **8.0971** | **11.4629** | **0.0180** | | **0.4218** | **0.4218** | | **0.4005** | **0.4005** | **0.0000** | **1,725.5277** | **1,725.5277** | **0.3884** | | **1,735.2368** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.8900e-003 | 0.0767 | 0.0176 | 2.1000e-004 | 4.6200e-003 | 2.9000e-004 | 4.9100e-003 | 1.2600e-003 | 2.8000e-004 | 1.5400e-003 | | 22.7019 | 22.7019 | 9.0000e-004 | | 22.7244 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0392** | **0.3293** | **0.3271** | **1.3900e-003** | **0.0838** | **1.4900e-003** | **0.0853** | **0.0226** | **1.4100e-003** | **0.0240** | | **143.1943** | **143.1943** | **5.3300e-003** | | **143.3277** |

## 3.8 Facility startup and testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0296** | **0.2468** | **0.2462** | **1.0200e-003** | **0.0628** | **1.0700e-003** | **0.0639** | **0.0170** | **1.0100e-003** | **0.0180** | | **104.6458** | **104.6458** | **3.8600e-003** | | **104.7422** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | 0.0000 | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | **0.0000** | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0296** | **0.2468** | **0.2462** | **1.0200e-003** | **0.0628** | **1.0700e-003** | **0.0639** | **0.0170** | **1.0100e-003** | **0.0180** | | **104.6458** | **104.6458** | **3.8600e-003** | | **104.7422** |

### 3.9 Final paving and demobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | 0.0000 | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | **0.0000** | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| Unmitigated | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.4000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | | **9.0000e-005** |

**Mitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.4000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | | **9.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 8 Construction
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.40 | 1000sqft | 0.01 | 396.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 8 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 14 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default coating EF

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 30.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | AcresOfGrading | 2.50 | 0.00 |
| tblGrading | MaterialExported | 0.00 | 14.00 |
| tblLandUse | LandUseSquareFeet | 400.00 | 396.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Tank foundation |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit and storm drain connection |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 1.2396 | 10.8074 | 14.4362 | 0.0244 | 0.2919 | 0.5539 | 0.6489 | 0.0754 | 0.5341 | 0.5599 | 0.0000 | 2,348.3516 | 2,348.3516 | 0.3938 | 0.0000 | 2,357.8115 |
| 2023 | 0.8689 | 8.7005 | 10.4030 | 0.0173 | 0.0628 | 0.4189 | 0.4817 | 0.0170 | 0.3854 | 0.4024 | 0.0000 | 1,681.0518 | 1,681.0518 | 0.5154 | 0.0000 | 1,693.9360 |
| **Maximum** | **1.2396** | **10.8074** | **14.4362** | **0.0244** | **0.2919** | **0.5539** | **0.6489** | **0.0754** | **0.5341** | **0.5599** | **0.0000** | **2,348.3516** | **2,348.3516** | **0.5154** | **0.0000** | **2,357.8115** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | | | | | | lb/day | | | | | | | lb/day | | | |
| 2022 | 1.2396 | 10.8074 | 14.4362 | 0.0244 | 0.2919 | 0.5539 | 0.6489 | 0.0754 | 0.5341 | 0.5599 | 0.0000 | 2,348.3516 | 2,348.3516 | 0.3938 | 0.0000 | 2,357.8115 |
| 2023 | 0.8689 | 8.7005 | 10.4030 | 0.0173 | 0.0628 | 0.4189 | 0.4817 | 0.0170 | 0.3854 | 0.4024 | 0.0000 | 1,681.0518 | 1,681.0518 | 0.5154 | 0.0000 | 1,693.9360 |
| **Maximum** | **1.2396** | **10.8074** | **14.4362** | **0.0244** | **0.2919** | **0.5539** | **0.6489** | **0.0754** | **0.5341** | **0.5599** | **0.0000** | **2,348.3516** | **2,348.3516** | **0.5154** | **0.0000** | **2,357.8115** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |
| Area | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 9/12/2022 | 9/16/2022 | 5 | 5 | |
| 2 | Injection line and conduit and storm drain connection | Trenching | 9/19/2022 | 10/7/2022 | 5 | 15 | |
| 3 | Tank foundation | Grading | 10/10/2022 | 10/14/2022 | 5 | 5 | |
| 4 | Tank construction | Building Construction | 10/17/2022 | 11/25/2022 | 5 | 30 | |
| 5 | Wellhead piping | Building Construction | 11/28/2022 | 12/2/2022 | 5 | 5 | |
| 6 | Building equipment upgrades | Building Construction | 12/5/2022 | 12/23/2022 | 5 | 15 | |
| 7 | Facility startup and testing | Building Construction | 12/26/2022 | 12/30/2022 | 5 | 5 | |
| 8 | Final paving and demobilization | Building Construction | 1/2/2023 | 1/6/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Injection line and conduit and storm drain connection | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit and storm drain connection | Excavators | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit and storm drain connection | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit and storm drain connection | Pumps | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit and storm drain connection | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Tank foundation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Tank foundation | Graders | 1 | 8.00 | 187 | 0.41 |
| Tank foundation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Tank foundation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Tank construction | Cranes | 1 | 4.00 | 231 | 0.29 |
| Tank construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Tank construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Tank construction | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead piping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Building equipment upgrades | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building equipment upgrades | Excavators | 1 | 8.00 | 158 | 0.38 |
| Building equipment upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building equipment upgrades | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building equipment upgrades | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |

| | | | | | |
|---|---|---|---|---|---|
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit and storm drain | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank foundation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building equipment upgrades | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |

| Total | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | 0.0000 | 0.2573 | 0.2573 | 0.0000 | 0.2367 | 0.2367 | | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | 0.0000 | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **0.0000** | **0.2573** | **0.2573** | **0.0000** | **0.2367** | **0.2367** | **0.0000** | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## 3.3 Injection line and conduit and storm drain connection -

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1904 | 10.2775 | 14.0433 | 0.0226 | | 0.5518 | 0.5518 | | 0.5321 | 0.5321 | | 2,164.9843 | 2,164.9843 | 0.3711 | | 2,174.2628 |
| **Total** | **1.1904** | **10.2775** | **14.0433** | **0.0226** | | **0.5518** | **0.5518** | | **0.5321** | **0.5321** | | **2,164.9843** | **2,164.9843** | **0.3711** | | **2,174.2628** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 9.7000e-004 | 0.0391 | 9.3000e-003 | 1.0000e-004 | 2.3100e-003 | 1.5000e-004 | 2.4600e-003 | 6.3000e-004 | 1.4000e-004 | 7.7000e-004 | | 11.1958 | 11.1958 | 4.7000e-004 | | 11.2074 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0492** | **0.5299** | **0.3928** | **1.7600e-003** | **0.0950** | **2.1100e-003** | **0.0971** | **0.0258** | **1.9900e-003** | **0.0278** | | **183.3674** | **183.3674** | **7.2600e-003** | | **183.5487** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1904 | 10.2775 | 14.0433 | 0.0226 | | 0.5518 | 0.5518 | | 0.5321 | 0.5321 | 0.0000 | 2,164.9843 | 2,164.9843 | 0.3711 | | 2,174.2628 |
| **Total** | **1.1904** | **10.2775** | **14.0433** | **0.0226** | | **0.5518** | **0.5518** | | **0.5321** | **0.5321** | **0.0000** | **2,164.9843** | **2,164.9843** | **0.3711** | | **2,174.2628** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 9.7000e-004 | 0.0391 | 9.3000e-003 | 1.0000e-004 | 2.3100e-003 | 1.5000e-004 | 2.4600e-003 | 6.3000e-004 | 1.4000e-004 | 7.7000e-004 | | 11.1958 | 11.1958 | 4.7000e-004 | | 11.2074 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0492** | **0.5299** | **0.3928** | **1.7600e-003** | **0.0950** | **2.1100e-003** | **0.0971** | **0.0258** | **1.9900e-003** | **0.0278** | | **183.3674** | **183.3674** | **7.2600e-003** | | **183.5487** |

## 3.4 Tank foundation - 2022

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3600e-003 | 0.0000 | 2.3600e-003 | 2.7000e-004 | 0.0000 | 2.7000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **2.3600e-003** | **0.2573** | **0.2597** | **2.7000e-004** | **0.2367** | **0.2370** | | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0600e-003 | 0.0000 | 1.0600e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | 0.0000 | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **1.0600e-003** | **0.2573** | **0.2584** | **1.2000e-004** | **0.2367** | **0.2369** | **0.0000** | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## 3.5 Tank construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0463 | 1.4400e-003 | 0.0477 | 0.0125 | 1.3700e-003 | 0.0139 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0695 | 0.0581 | 0.5115 | 1.2100e-003 | 0.2457 | 1.0400e-003 | 0.2467 | 0.0629 | 9.6000e-004 | 0.0639 | | 120.7893 | 120.7893 | 4.4600e-003 | | 120.9007 |
| **Total** | **0.0830** | **0.5199** | **0.6393** | **2.2600e-003** | **0.2919** | **2.4800e-003** | **0.2944** | **0.0754** | **2.3300e-003** | **0.0777** | | **232.5662** | **232.5662** | **9.0200e-003** | | **232.7916** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0463 | 1.4400e-003 | 0.0477 | 0.0125 | 1.3700e-003 | 0.0139 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0695 | 0.0581 | 0.5115 | 1.2100e-003 | 0.2457 | 1.0400e-003 | 0.2467 | 0.0629 | 9.6000e-004 | 0.0639 | | 120.7893 | 120.7893 | 4.4600e-003 | | 120.9007 |
| **Total** | **0.0830** | **0.5199** | **0.6393** | **2.2600e-003** | **0.2919** | **2.4800e-003** | **0.2944** | **0.0754** | **2.3300e-003** | **0.0777** | | **232.5662** | **232.5662** | **9.0200e-003** | | **232.7916** |

## 3.6 Wellhead piping - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## 3.7 Building equipment upgrades - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.8838 | 8.0971 | 11.4629 | 0.0180 | | 0.4218 | 0.4218 | | 0.4005 | 0.4005 | | 1,725.5277 | 1,725.5277 | 0.3884 | | 1,735.2368 |
| **Total** | **0.8838** | **8.0971** | **11.4629** | **0.0180** | | **0.4218** | **0.4218** | | **0.4005** | **0.4005** | | **1,725.5277** | **1,725.5277** | **0.3884** | | **1,735.2368** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.9400e-003 | 0.0782 | 0.0186 | 2.1000e-004 | 4.6200e-003 | 3.0000e-004 | 4.9200e-003 | 1.2600e-003 | 2.8000e-004 | 1.5500e-003 | | 22.3915 | 22.3915 | 9.3000e-004 | | 22.4149 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0435** | **0.3381** | **0.3382** | **1.3500e-003** | **0.0838** | **1.5400e-003** | **0.0854** | **0.0226** | **1.4500e-003** | **0.0240** | | **138.6747** | **138.6747** | **5.4400e-003** | | **138.8107** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8838 | 8.0971 | 11.4629 | 0.0180 | | 0.4218 | 0.4218 | | 0.4005 | 0.4005 | 0.0000 | 1,725.5277 | 1,725.5277 | 0.3884 | | 1,735.2368 |
| **Total** | **0.8838** | **8.0971** | **11.4629** | **0.0180** | | **0.4218** | **0.4218** | | **0.4005** | **0.4005** | **0.0000** | **1,725.5277** | **1,725.5277** | **0.3884** | | **1,735.2368** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |
| Hauling | 1.9400e-003 | 0.0782 | 0.0186 | 2.1000e-004 | 4.6200e-003 | 3.0000e-004 | 4.9200e-003 | 1.2600e-003 | 2.8000e-004 | 1.5500e-003 | | 22.3915 | 22.3915 | 9.3000e-004 | | 22.4149 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0435** | **0.3381** | **0.3382** | **1.3500e-003** | **0.0838** | **1.5400e-003** | **0.0854** | **0.0226** | **1.4500e-003** | **0.0240** | | **138.6747** | **138.6747** | **5.4400e-003** | | **138.8107** |

## 3.8 Facility startup and testing - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0328** | **0.2527** | **0.2557** | **9.9000e-004** | **0.0628** | **1.1100e-003** | **0.0639** | **0.0170** | **1.0500e-003** | **0.0180** | | **101.1845** | **101.1845** | **3.9500e-003** | | **101.2832** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | 0.0000 | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | **0.0000** | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0328** | **0.2527** | **0.2557** | **9.9000e-004** | **0.0628** | **1.1100e-003** | **0.0639** | **0.0170** | **1.0500e-003** | **0.0180** | | **101.1845** | **101.1845** | **3.9500e-003** | | **101.2832** |

### 3.9 Final paving and demobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | 0.0000 | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | **0.0000** | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| Unmitigated | 1.9000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.4000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | | **9.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.4000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.9000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | **0.0000** | | **9.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 9 Construction
## Santa Cruz County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |
| Other Asphalt Surfaces | 0.40 | 1000sqft | 0.01 | 396.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 9 Construction

Land Use - Surrogate land uses for monitoring well, pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 26 CY of material assumed to be exported and 0.02 acres total disturbed area

Architectural Coating - Default coating EF

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 3.00 |
| tblConstructionPhase | NumDays | 100.00 | 2.00 |
| tblConstructionPhase | PhaseEndDate | 5/3/2021 | 1/13/2023 |
| tblConstructionPhase | PhaseEndDate | 2/9/2022 | 2/3/2023 |
| tblConstructionPhase | PhaseEndDate | 11/16/2022 | 2/10/2023 |
| tblConstructionPhase | PhaseEndDate | 4/5/2023 | 2/17/2023 |
| tblConstructionPhase | PhaseStartDate | 5/3/2021 | 1/9/2023 |
| tblConstructionPhase | PhaseStartDate | 9/23/2021 | 1/30/2023 |
| tblConstructionPhase | PhaseStartDate | 6/30/2022 | 2/6/2023 |
| tblConstructionPhase | PhaseStartDate | 11/17/2022 | 2/13/2023 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |

| | | | |
|---|---|---|---|
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 14.00 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblLandUse | LandUseSquareFeet | 400.00 | 396.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Site prep and conductor casing install |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Wellhead piping |
| tblOffRoadEquipment | PhaseName | | Facility startup and testing |
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2021 | 0.0120 | 0.1208 | 0.1078 | 2.5000e-004 | 5.8000e-004 | 5.5800e-003 | 6.1600e-003 | 1.6000e-004 | 5.2800e-003 | 5.4300e-003 | 0.0000 | 22.3177 | 22.3177 | 5.4700e-003 | 0.0000 | 22.4544 |
| 2023 | 0.0124 | 0.1160 | 0.1382 | 2.5000e-004 | 1.1600e-003 | 5.3300e-003 | 6.4900e-003 | 3.1000e-004 | 5.0600e-003 | 5.3800e-003 | 0.0000 | 22.1240 | 22.1240 | 4.3200e-003 | 0.0000 | 22.2321 |
| **Maximum** | **0.0124** | **0.1208** | **0.1382** | **2.5000e-004** | **1.1600e-003** | **5.5800e-003** | **6.4900e-003** | **3.1000e-004** | **5.2800e-003** | **5.4300e-003** | **0.0000** | **22.3177** | **22.3177** | **5.4700e-003** | **0.0000** | **22.4544** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021 | 0.0120 | 0.1208 | 0.1078 | 2.5000e-004 | 5.8000e-004 | 5.5800e-003 | 6.1600e-003 | 1.6000e-004 | 5.2800e-003 | 5.4300e-003 | 0.0000 | 22.3176 | 22.3176 | 5.4700e-003 | 0.0000 | 22.4543 |
| 2023 | 0.0124 | 0.1160 | 0.1382 | 2.5000e-004 | 1.1500e-003 | 5.3300e-003 | 6.4900e-003 | 3.1000e-004 | 5.0600e-003 | 5.3800e-003 | 0.0000 | 22.1240 | 22.1240 | 4.3200e-003 | 0.0000 | 22.2321 |
| **Maximum** | **0.0124** | **0.1208** | **0.1382** | **2.5000e-004** | **1.1500e-003** | **5.5800e-003** | **6.4900e-003** | **3.1000e-004** | **5.2800e-003** | **5.4300e-003** | **0.0000** | **22.3176** | **22.3176** | **5.4700e-003** | **0.0000** | **22.4543** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| 1 | 5-3-2021 | 8-2-2021 | 0.0948 | 0.0948 |
| 7 | 11-3-2022 | 2-2-2023 | 0.0687 | 0.0687 |
| 8 | 2-3-2023 | 5-2-2023 | 0.0308 | 0.0308 |
| | | **Highest** | 0.0948 | 0.0948 |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 4.3000e-004 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **4.3000e-004** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 4.3000e-004 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **4.3000e-004** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casing install | Site Preparation | 5/3/2021 | 5/7/2021 | 5 | 5 | |
| 2 | Well drilling and construction | Building Construction | 5/10/2021 | 5/14/2021 | 5 | 5 | |
| 3 | Monitoring well development | Building Construction | 5/17/2021 | 5/19/2021 | 5 | 3 | |
| 4 | Site cleanup | Building Construction | 5/19/2021 | 5/20/2021 | 5 | 2 | |
| 5 | Mobilization | Site Preparation | 1/9/2023 | 1/13/2023 | 5 | 5 | |
| 6 | Injection line and conduit | Trenching | 1/16/2023 | 1/27/2023 | 5 | 10 | |
| 7 | Wellhead piping | Building Construction | 1/30/2023 | 2/3/2023 | 5 | 5 | |
| 8 | Facility startup and testing | Building Construction | 2/6/2023 | 2/10/2023 | 5 | 5 | |
| 9 | Final paving and demobilization | Building Construction | 2/13/2023 | 2/17/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Well drilling and construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Monitoring well development | Cranes | 0 | 0.00 | 231 | 0.29 |
| Site cleanup | Cranes | 1 | 4.00 | 231 | 0.29 |
| Well drilling and construction | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Monitoring well development | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Site cleanup | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Site prep and conductor casing install | Graders | 1 | 8.00 | 187 | 0.41 |
| Well drilling and construction | Tractors/Loaders/Backhoes | 1 | 24.00 | 97 | 0.37 |
| Monitoring well development | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site cleanup | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing install | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing install | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Well drilling and construction | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Well drilling and construction | Pumps | 1 | 24.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Monitoring well development | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Monitoring well development | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Monitoring well development | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | 1 | 8.00 | 158 | 0.38 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Facility startup and testing | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Wellhead piping | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Facility startup and testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Final paving and demobilization | Pavers | | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | | 1 | 4.00 | 80 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well drilling and construction | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Monitoring well development | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site prep and conductor casing install | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

### 3.2 Site prep and conductor casing install - 2021

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.2500e-003 | 0.0271 | 0.0153 | 5.0000e-005 | | 9.8000e-004 | 9.8000e-004 | | 9.0000e-004 | 9.0000e-004 | 0.0000 | 4.2063 | 4.2063 | 1.3600e-003 | 0.0000 | 4.2403 |
| **Total** | **2.2500e-003** | **0.0271** | **0.0153** | **5.0000e-005** | **1.0000e-005** | **9.8000e-004** | **9.9000e-004** | **0.0000** | **9.0000e-004** | **9.0000e-004** | **0.0000** | **4.2063** | **4.2063** | **1.3600e-003** | **0.0000** | **4.2403** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 6.1000e-004 | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1294 | 0.1294 | 1.0000e-005 | 0.0000 | 0.1295 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.7000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1420 | 0.1420 | 1.0000e-005 | 0.0000 | 0.1421 |
| **Total** | **1.0000e-004** | **6.8000e-004** | **8.3000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2714** | **0.2714** | **2.0000e-005** | **0.0000** | **0.2716** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.2500e-003 | 0.0271 | 0.0153 | 5.0000e-005 | | 9.8000e-004 | 9.8000e-004 | | 9.0000e-004 | 9.0000e-004 | 0.0000 | 4.2063 | 4.2063 | 1.3600e-003 | 0.0000 | 4.2403 |
| **Total** | **2.2500e-003** | **0.0271** | **0.0153** | **5.0000e-005** | **0.0000** | **9.8000e-004** | **9.8000e-004** | **0.0000** | **9.0000e-004** | **9.0000e-004** | **0.0000** | **4.2063** | **4.2063** | **1.3600e-003** | **0.0000** | **4.2403** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 6.1000e-004 | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1294 | 0.1294 | 1.0000e-005 | 0.0000 | 0.1295 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.7000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1420 | 0.1420 | 1.0000e-005 | 0.0000 | 0.1421 |
| **Total** | **1.0000e-004** | **6.8000e-004** | **8.3000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2714** | **0.2714** | **2.0000e-005** | **0.0000** | **0.2716** |

## 3.3 Well drilling and construction - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 7.1600e-003 | 0.0698 | 0.0693 | 1.5000e-004 | | 3.4900e-003 | 3.4900e-003 | | 3.3100e-003 | 3.3100e-003 | 0.0000 | 13.4991 | 13.4991 | 3.2300e-003 | 0.0000 | 13.5798 |
| **Total** | **7.1600e-003** | **0.0698** | **0.0693** | **1.5000e-004** | | **3.4900e-003** | **3.4900e-003** | | **3.3100e-003** | **3.3100e-003** | **0.0000** | **13.4991** | **13.4991** | **3.2300e-003** | **0.0000** | **13.5798** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.2000e-004 | 7.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0777 | 0.0777 | 0.0000 | 0.0000 | 0.0778 |
| Vendor | 2.0000e-005 | 6.1000e-004 | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1294 | 0.1294 | 1.0000e-005 | 0.0000 | 0.1295 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.7000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1420 | 0.1420 | 1.0000e-005 | 0.0000 | 0.1421 |
| **Total** | **1.1000e-004** | **1.0000e-003** | **9.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.3491** | **0.3491** | **2.0000e-005** | **0.0000** | **0.3494** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 7.1600e-003 | 0.0698 | 0.0693 | 1.5000e-004 | | 3.4900e-003 | 3.4900e-003 | | 3.3100e-003 | 3.3100e-003 | 0.0000 | 13.4991 | 13.4991 | 3.2300e-003 | 0.0000 | 13.5797 |
| **Total** | **7.1600e-003** | **0.0698** | **0.0693** | **1.5000e-004** | | **3.4900e-003** | **3.4900e-003** | | **3.3100e-003** | **3.3100e-003** | **0.0000** | **13.4991** | **13.4991** | **3.2300e-003** | **0.0000** | **13.5797** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 1.0000e-005 | 3.2000e-004 | 7.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0777 | 0.0777 | 0.0000 | 0.0000 | 0.0778 |
| Vendor | 2.0000e-005 | 6.1000e-004 | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1294 | 0.1294 | 1.0000e-005 | 0.0000 | 0.1295 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.7000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1420 | 0.1420 | 1.0000e-005 | 0.0000 | 0.1421 |
| **Total** | **1.1000e-004** | **1.0000e-003** | **9.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.3491** | **0.3491** | **2.0000e-005** | **0.0000** | **0.3494** |

## 3.4 Monitoring well development - 2021

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5600e-003 | 0.0141 | 0.0140 | 3.0000e-005 | | 7.0000e-004 | 7.0000e-004 | | 6.8000e-004 | 6.8000e-004 | 0.0000 | 2.8010 | 2.8010 | 5.4000e-004 | 0.0000 | 2.8146 |
| **Total** | **1.5600e-003** | **0.0141** | **0.0140** | **3.0000e-005** | | **7.0000e-004** | **7.0000e-004** | | **6.8000e-004** | **6.8000e-004** | **0.0000** | **2.8010** | **2.8010** | **5.4000e-004** | **0.0000** | **2.8146** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 3.7000e-004 | 1.0000e-004 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0776 | 0.0776 | 0.0000 | 0.0000 | 0.0777 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.0000e-004 | 0.0000 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0852 | 0.0852 | 0.0000 | 0.0000 | 0.0853 |

| Total | 6.0000e-005 | 4.1000e-004 | 5.0000e-004 | 0.0000 | 1.1000e-004 | 0.0000 | 1.2000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1628 | 0.1628 | 0.0000 | 0.0000 | 0.1630 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5600e-003 | 0.0141 | 0.0140 | 3.0000e-005 | | 7.0000e-004 | 7.0000e-004 | | 6.8000e-004 | 6.8000e-004 | 0.0000 | 2.8010 | 2.8010 | 5.4000e-004 | 0.0000 | 2.8146 |
| **Total** | **1.5600e-003** | **0.0141** | **0.0140** | **3.0000e-005** | | **7.0000e-004** | **7.0000e-004** | | **6.8000e-004** | **6.8000e-004** | **0.0000** | **2.8010** | **2.8010** | **5.4000e-004** | **0.0000** | **2.8146** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 3.7000e-004 | 1.0000e-004 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0776 | 0.0776 | 0.0000 | 0.0000 | 0.0777 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.0000e-004 | 0.0000 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0852 | 0.0852 | 0.0000 | 0.0000 | 0.0853 |
| **Total** | **6.0000e-005** | **4.1000e-004** | **5.0000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.2000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1628** | **0.1628** | **0.0000** | **0.0000** | **0.1630** |

## 3.5 Site cleanup - 2021

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 7.1000e-004 | 7.4000e-003 | 6.6800e-003 | 1.0000e-005 | | 4.1000e-004 | 4.1000e-004 | | 3.7000e-004 | 3.7000e-004 | 0.0000 | 0.9337 | 0.9337 | 3.0000e-004 | 0.0000 | 0.9412 |
| **Total** | **7.1000e-004** | **7.4000e-003** | **6.6800e-003** | **1.0000e-005** | | **4.1000e-004** | **4.1000e-004** | | **3.7000e-004** | **3.7000e-004** | **0.0000** | **0.9337** | **0.9337** | **3.0000e-004** | **0.0000** | **0.9412** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 2.4000e-004 | 7.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0517 | 0.0517 | 0.0000 | 0.0000 | 0.0518 |
| Worker | 3.0000e-005 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0426 | 0.0426 | 0.0000 | 0.0000 | 0.0426 |
| **Total** | **4.0000e-005** | **2.6000e-004** | **2.7000e-004** | **0.0000** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0943** | **0.0943** | **0.0000** | **0.0000** | **0.0944** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 7.1000e-004 | 7.4000e-003 | 6.6800e-003 | 1.0000e-005 | | 4.1000e-004 | 4.1000e-004 | | 3.7000e-004 | 3.7000e-004 | 0.0000 | 0.9337 | 0.9337 | 3.0000e-004 | 0.0000 | 0.9412 |
| **Total** | **7.1000e-004** | **7.4000e-003** | **6.6800e-003** | **1.0000e-005** | | **4.1000e-004** | **4.1000e-004** | | **3.7000e-004** | **3.7000e-004** | **0.0000** | **0.9337** | **0.9337** | **3.0000e-004** | **0.0000** | **0.9412** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 2.4000e-004 | 7.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0517 | 0.0517 | 0.0000 | 0.0000 | 0.0518 |
| Worker | 3.0000e-005 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0426 | 0.0426 | 0.0000 | 0.0000 | 0.0426 |
| **Total** | **4.0000e-005** | **2.6000e-004** | **2.7000e-004** | **0.0000** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0943** | **0.0943** | **0.0000** | **0.0000** | **0.0944** |

## 3.6 Mobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.3400e-003 | 0.0155 | 9.8100e-003 | 2.0000e-005 | | 5.7000e-004 | 5.7000e-004 | | 5.2000e-004 | 5.2000e-004 | 0.0000 | 2.1374 | 2.1374 | 6.9000e-004 | 0.0000 | 2.1547 |
| **Total** | **1.3400e-003** | **0.0155** | **9.8100e-003** | **2.0000e-005** | **1.0000e-005** | **5.7000e-004** | **5.8000e-004** | **0.0000** | **5.2000e-004** | **5.2000e-004** | **0.0000** | **2.1374** | **2.1374** | **6.9000e-004** | **0.0000** | **2.1547** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.3400e-003 | 0.0155 | 9.8100e-003 | 2.0000e-005 | | 5.7000e-004 | 5.7000e-004 | | 5.2000e-004 | 5.2000e-004 | 0.0000 | 2.1374 | 2.1374 | 6.9000e-004 | 0.0000 | 2.1547 |
| **Total** | **1.3400e-003** | **0.0155** | **9.8100e-003** | **2.0000e-005** | **0.0000** | **5.7000e-004** | **5.7000e-004** | **0.0000** | **5.2000e-004** | **5.2000e-004** | **0.0000** | **2.1374** | **2.1374** | **6.9000e-004** | **0.0000** | **2.1547** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## 3.7 Injection line and conduit - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.5200e-003 | 0.0469 | 0.0701 | 1.1000e-004 | | 2.3700e-003 | 2.3700e-003 | | 2.2900e-003 | 2.2900e-003 | 0.0000 | 9.8222 | 9.8222 | 1.6500e-003 | 0.0000 | 9.8635 |
| **Total** | **5.5200e-003** | **0.0469** | **0.0701** | **1.1000e-004** | | **2.3700e-003** | **2.3700e-003** | | **2.2900e-003** | **2.2900e-003** | **0.0000** | **9.8222** | **9.8222** | **1.6500e-003** | **0.0000** | **9.8635** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.3000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0750 | 0.0750 | 0.0000 | 0.0000 | 0.0750 |
| Vendor | 5.0000e-005 | 1.9500e-003 | 5.4000e-004 | 1.0000e-005 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.5046 | 0.5046 | 2.0000e-005 | 0.0000 | 0.5051 |
| Worker | 1.5000e-004 | 1.2000e-004 | 1.1200e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2642 | 0.2642 | 1.0000e-005 | 0.0000 | 0.2644 |
| **Total** | **2.1000e-004** | **2.3000e-003** | **1.7200e-003** | **1.0000e-005** | **4.7000e-004** | **0.0000** | **4.7000e-004** | **1.2000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **0.8437** | **0.8437** | **3.0000e-005** | **0.0000** | **0.8445** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.5200e-003 | 0.0469 | 0.0701 | 1.1000e-004 | | 2.3700e-003 | 2.3700e-003 | | 2.2900e-003 | 2.2900e-003 | 0.0000 | 9.8221 | 9.8221 | 1.6500e-003 | 0.0000 | 9.8635 |
| **Total** | **5.5200e-003** | **0.0469** | **0.0701** | **1.1000e-004** | | **2.3700e-003** | **2.3700e-003** | | **2.2900e-003** | **2.2900e-003** | **0.0000** | **9.8221** | **9.8221** | **1.6500e-003** | **0.0000** | **9.8635** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.3000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0750 | 0.0750 | 0.0000 | 0.0000 | 0.0750 |
| Vendor | 5.0000e-005 | 1.9500e-003 | 5.4000e-004 | 1.0000e-005 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.5046 | 0.5046 | 2.0000e-005 | 0.0000 | 0.5051 |
| Worker | 1.5000e-004 | 1.2000e-004 | 1.1200e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2642 | 0.2642 | 1.0000e-005 | 0.0000 | 0.2644 |
| **Total** | **2.1000e-004** | **2.3000e-003** | **1.7200e-003** | **1.0000e-005** | **4.7000e-004** | **0.0000** | **4.7000e-004** | **1.2000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **0.8437** | **0.8437** | **3.0000e-005** | **0.0000** | **0.8445** |

## 3.8 Wellhead piping - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |

| Total | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
| **Total** | **1.4600e-003** | **0.0140** | **0.0143** | **3.0000e-005** | | **6.7000e-004** | **6.7000e-004** | | **6.4000e-004** | **6.4000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.8000e-004** | **0.0000** | **2.3918** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## 3.9 Facility startup and testing - 2023

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
| **Total** | **1.4600e-003** | **0.0140** | **0.0143** | **3.0000e-005** | | **6.7000e-004** | **6.7000e-004** | | **6.4000e-004** | **6.4000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.8000e-004** | **0.0000** | **2.3918** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
| **Total** | **1.4600e-003** | **0.0140** | **0.0143** | **3.0000e-005** | | **6.7000e-004** | **6.7000e-004** | | **6.4000e-004** | **6.4000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.8000e-004** | **0.0000** | **2.3918** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## 3.10 Final paving and demobilization - 2023

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.1000e-003 | 0.0212 | 0.0254 | 4.0000e-005 | | 1.0500e-003 | 1.0500e-003 | | 9.6000e-004 | 9.6000e-004 | 0.0000 | 3.5890 | 3.5890 | 1.1600e-003 | 0.0000 | 3.6180 |
| **Total** | **2.1000e-003** | **0.0212** | **0.0254** | **4.0000e-005** | | **1.0500e-003** | **1.0500e-003** | | **9.6000e-004** | **9.6000e-004** | **0.0000** | **3.5890** | **3.5890** | **1.1600e-003** | **0.0000** | **3.6180** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| Off-Road | 2.1000e-003 | 0.0212 | 0.0254 | 4.0000e-005 | | 1.0500e-003 | 1.0500e-003 | | 9.6000e-004 | 9.6000e-004 | 0.0000 | 3.5890 | 3.5890 | 1.1600e-003 | 0.0000 | 3.6180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.1000e-003** | **0.0212** | **0.0254** | **4.0000e-005** | | **1.0500e-003** | **1.0500e-003** | | **9.6000e-004** | **9.6000e-004** | **0.0000** | **3.5890** | **3.5890** | **1.1600e-003** | **0.0000** | **3.6180** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 4.3000e-004 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Unmitigated | 4.3000e-004 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 4.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **4.3000e-004** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

**Mitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 4.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **4.3000e-004** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | tons | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 9 Construction
## Santa Cruz County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |
| Other Asphalt Surfaces | 0.40 | 1000sqft | 0.01 | 396.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 9 Construction

Land Use - Surrogate land uses for monitoring well, pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 26 CY of material assumed to be exported and 0.02 acres total disturbed area

Architectural Coating - Default coating EF

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 3.00 |
| tblConstructionPhase | NumDays | 100.00 | 2.00 |
| tblConstructionPhase | PhaseEndDate | 5/3/2021 | 1/13/2023 |
| tblConstructionPhase | PhaseEndDate | 2/9/2022 | 2/3/2023 |
| tblConstructionPhase | PhaseEndDate | 11/16/2022 | 2/10/2023 |
| tblConstructionPhase | PhaseEndDate | 4/5/2023 | 2/17/2023 |
| tblConstructionPhase | PhaseStartDate | 5/3/2021 | 1/9/2023 |
| tblConstructionPhase | PhaseStartDate | 9/23/2021 | 1/30/2023 |
| tblConstructionPhase | PhaseStartDate | 6/30/2022 | 2/6/2023 |
| tblConstructionPhase | PhaseStartDate | 11/17/2022 | 2/13/2023 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |

| | | | |
|---|---|---|---|
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 14.00 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblLandUse | LandUseSquareFeet | 400.00 | 396.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Site prep and conductor casing install |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Wellhead piping |
| tblOffRoadEquipment | PhaseName | | Facility startup and testing |
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 2.9087 | 28.3164 | 28.0947 | 0.0634 | 0.1420 | 1.3959 | 1.4820 | 0.0383 | 1.3269 | 1.3501 | 0.0000 | 6,109.7503 | 6,109.7503 | 1.4286 | 0.0000 | 6,145.4655 |
| 2023 | 1.4347 | 15.0987 | 14.6019 | 0.0282 | 0.1443 | 0.4755 | 0.7907 | 0.0385 | 0.4585 | 0.6332 | 0.0000 | 2,744.0517 | 2,744.0517 | 0.8241 | 0.0000 | 2,764.6540 |
| **Maximum** | **2.9087** | **28.3164** | **28.0947** | **0.0634** | **0.1443** | **1.3959** | **1.4820** | **0.0385** | **1.3269** | **1.3501** | **0.0000** | **6,109.7503** | **6,109.7503** | **1.4286** | **0.0000** | **6,145.4655** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021 | 2.9087 | 28.3164 | 28.0947 | 0.0634 | 0.1420 | 1.3959 | 1.4820 | 0.0383 | 1.3269 | 1.3501 | 0.0000 | 6,109.7503 | 6,109.7503 | 1.4286 | 0.0000 | 6,145.4655 |
| 2023 | 1.4347 | 15.0987 | 14.6019 | 0.0282 | 0.1430 | 0.4755 | 0.7894 | 0.0384 | 0.4585 | 0.6331 | 0.0000 | 2,744.0517 | 2,744.0517 | 0.8241 | 0.0000 | 2,764.6540 |
| **Maximum** | **2.9087** | **28.3164** | **28.0947** | **0.0634** | **0.1430** | **1.3959** | **1.4820** | **0.0384** | **1.3269** | **1.3501** | **0.0000** | **6,109.7503** | **6,109.7503** | **1.4286** | **0.0000** | **6,145.4655** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.45** | **0.00** | **0.06** | **0.20** | **0.00** | **0.01** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | | lb/day | | |
| Area | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | **0.0000** | **1.2000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | | lb/day | | |
| Area | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | **0.0000** | **1.2000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casing install | Site Preparation | 5/3/2021 | 5/7/2021 | 5 | 5 | |
| 2 | Well drilling and construction | Building Construction | 5/10/2021 | 5/14/2021 | 5 | 5 | |
| 3 | Monitoring well development | Building Construction | 5/17/2021 | 5/19/2021 | 5 | 3 | |
| 4 | Site cleanup | Building Construction | 5/19/2021 | 5/20/2021 | 5 | 2 | |
| 5 | Mobilization | Site Preparation | 1/9/2023 | 1/13/2023 | 5 | 5 | |
| 6 | Injection line and conduit | Trenching | 1/16/2023 | 1/27/2023 | 5 | 10 | |
| 7 | Wellhead piping | Building Construction | 1/30/2023 | 2/3/2023 | 5 | 5 | |
| 8 | Facility startup and testing | Building Construction | 2/6/2023 | 2/10/2023 | 5 | 5 | |
| 9 | Final paving and demobilization | Building Construction | 2/13/2023 | 2/17/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Well drilling and construction | Cranes | 0 | 0.00 | 231 | 0.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Monitoring well development | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Site cleanup | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Well drilling and construction | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Monitoring well development | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Site cleanup | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Site prep and conductor casing install | Graders | | 1 | 8.00 | 187 | 0.41 |
| Well drilling and construction | Tractors/Loaders/Backhoes | | 1 | 24.00 | 97 | 0.37 |
| Monitoring well development | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Site cleanup | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing install | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing install | Bore/Drill Rigs | | 1 | 8.00 | 221 | 0.50 |
| Well drilling and construction | Bore/Drill Rigs | | 1 | 24.00 | 221 | 0.50 |
| Wellhead piping | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Well drilling and construction | Pumps | | 1 | 24.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Monitoring well development | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Monitoring well development | Bore/Drill Rigs | | 1 | 8.00 | 221 | 0.50 |
| Monitoring well development | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Concrete/Industrial Saws | | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | | 1 | 8.00 | 158 | 0.38 |
| Facility startup and testing | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Wellhead piping | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Facility startup and testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Final paving and demobilization | Pavers | | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | | 1 | 4.00 | 80 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well drilling and construction | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Monitoring well development | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site prep and conductor casing install | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casing install - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3300e-003 | 0.0000 | 2.3300e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8984 | 10.8432 | 6.1014 | 0.0192 | | 0.3911 | 0.3911 | | 0.3598 | 0.3598 | | 1,854.6466 | 1,854.6466 | 0.5998 | | 1,869.6424 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.8984** | **10.8432** | **6.1014** | **0.0192** | **2.3300e-003** | **0.3911** | **0.3934** | **2.6000e-004** | **0.3598** | **0.3601** | | **1,854.6466** | **1,854.6466** | **0.5998** | | **1,869.6424** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |
| Worker | 0.0332 | 0.0261 | 0.2772 | 6.6000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 65.6571 | 65.6571 | 2.5700e-003 | | 65.7214 |
| **Total** | **0.0401** | **0.2681** | **0.3388** | **1.2000e-003** | **0.0792** | **1.3100e-003** | **0.0805** | **0.0213** | **1.2400e-003** | **0.0226** | | **123.2038** | **123.2038** | **4.7700e-003** | | **123.3230** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0500e-003 | 0.0000 | 1.0500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8984 | 10.8432 | 6.1014 | 0.0192 | | 0.3911 | 0.3911 | | 0.3598 | 0.3598 | 0.0000 | 1,854.6466 | 1,854.6466 | 0.5998 | | 1,869.6424 |
| **Total** | **0.8984** | **10.8432** | **6.1014** | **0.0192** | **1.0500e-003** | **0.3911** | **0.3922** | **1.2000e-004** | **0.3598** | **0.3599** | **0.0000** | **1,854.6466** | **1,854.6466** | **0.5998** | | **1,869.6424** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |
| Worker | 0.0332 | 0.0261 | 0.2772 | 6.6000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 65.6571 | 65.6571 | 2.5700e-003 | | 65.7214 |
| **Total** | **0.0401** | **0.2681** | **0.3388** | **1.2000e-003** | **0.0792** | **1.3100e-003** | **0.0805** | **0.0213** | **1.2400e-003** | **0.0226** | | **123.2038** | **123.2038** | **4.7700e-003** | | **123.3230** |

## 3.3 Well drilling and construction - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.8656 | 27.9231 | 27.7280 | 0.0619 | | 1.3941 | 1.3941 | | 1.3252 | 1.3252 | | 5,952.0869 | 5,952.0869 | 1.4225 | | 5,987.6488 |
| **Total** | **2.8656** | **27.9231** | **27.7280** | **0.0619** | | **1.3941** | **1.3941** | | **1.3252** | **1.3252** | | **5,952.0869** | **5,952.0869** | **1.4225** | | **5,987.6488** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.0200e-003 | 0.1251 | 0.0279 | 3.2000e-004 | 6.9300e-003 | 5.0000e-004 | 7.4200e-003 | 1.8900e-003 | 4.7000e-004 | 2.3700e-003 | | 34.4596 | 34.4596 | 1.3600e-003 | | 34.4937 |
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0332 | 0.0261 | 0.2772 | 6.6000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 65.6571 | 65.6571 | 2.5700e-003 | | 65.7214 |
| **Total** | **0.0431** | **0.3932** | **0.3667** | **1.5200e-003** | **0.0861** | **1.8100e-003** | **0.0879** | **0.0232** | **1.7100e-003** | **0.0249** | | **157.6633** | **157.6633** | **6.1300e-003** | | **157.8166** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.8656 | 27.9231 | 27.7280 | 0.0619 | | 1.3941 | 1.3941 | | 1.3252 | 1.3252 | 0.0000 | 5,952.0869 | 5,952.0869 | 1.4225 | | 5,987.6488 |
| **Total** | **2.8656** | **27.9231** | **27.7280** | **0.0619** | | **1.3941** | **1.3941** | | **1.3252** | **1.3252** | **0.0000** | **5,952.0869** | **5,952.0869** | **1.4225** | | **5,987.6488** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.0200e-003 | 0.1251 | 0.0279 | 3.2000e-004 | 6.9300e-003 | 5.0000e-004 | 7.4200e-003 | 1.8900e-003 | 4.7000e-004 | 2.3700e-003 | | 34.4596 | 34.4596 | 1.3600e-003 | | 34.4937 |
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |
| Worker | 0.0332 | 0.0261 | 0.2772 | 6.6000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 65.6571 | 65.6571 | 2.5700e-003 | | 65.7214 |
| **Total** | **0.0431** | **0.3932** | **0.3667** | **1.5200e-003** | **0.0861** | **1.8100e-003** | **0.0879** | **0.0232** | **1.7100e-003** | **0.0249** | | **157.6633** | **157.6633** | **6.1300e-003** | | **157.8166** |

# 3.4 Monitoring well development - 2021

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0368 | 9.4039 | 9.3499 | 0.0215 | | 0.4685 | 0.4685 | | 0.4545 | 0.4545 | | 2,058.3919 | 2,058.3919 | 0.4004 | | 2,068.4019 |
| **Total** | **1.0368** | **9.4039** | **9.3499** | **0.0215** | | **0.4685** | **0.4685** | | **0.4545** | **0.4545** | | **2,058.3919** | **2,058.3919** | **0.4004** | | **2,068.4019** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |
| Worker | 0.0332 | 0.0261 | 0.2772 | 6.6000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 65.6571 | 65.6571 | 2.5700e-003 | | 65.7214 |
| **Total** | **0.0401** | **0.2681** | **0.3388** | **1.2000e-003** | **0.0792** | **1.3100e-003** | **0.0805** | **0.0213** | **1.2400e-003** | **0.0226** | | **123.2038** | **123.2038** | **4.7700e-003** | | **123.3230** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0368 | 9.4039 | 9.3499 | 0.0215 | | 0.4685 | 0.4685 | | 0.4545 | 0.4545 | 0.0000 | 2,058.3919 | 2,058.3919 | 0.4004 | | 2,068.4019 |

| Total | 1.0368 | 9.4039 | 9.3499 | 0.0215 | | 0.4685 | 0.4685 | | 0.4545 | 0.4545 | 0.0000 | 2,058.3919 | 2,058.3919 | 0.4004 | | 2,068.4019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |
| Worker | 0.0332 | 0.0261 | 0.2772 | 6.6000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 65.6571 | 65.6571 | 2.5700e-003 | | 65.7214 |
| **Total** | **0.0401** | **0.2681** | **0.3388** | **1.2000e-003** | **0.0792** | **1.3100e-003** | **0.0805** | **0.0213** | **1.2400e-003** | **0.0226** | | **123.2038** | **123.2038** | **4.7700e-003** | | **123.3230** |

## 3.5 Site cleanup - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7103 | 7.3954 | 6.6798 | 0.0106 | | 0.4057 | 0.4057 | | 0.3732 | 0.3732 | | 1,029.2004 | 1,029.2004 | 0.3329 | | 1,037.5220 |
| **Total** | **0.7103** | **7.3954** | **6.6798** | **0.0106** | | **0.4057** | **0.4057** | | **0.3732** | **0.3732** | | **1,029.2004** | **1,029.2004** | **0.3329** | | **1,037.5220** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |
| Worker | 0.0249 | 0.0195 | 0.2079 | 4.9000e-004 | 0.0493 | 4.0000e-004 | 0.0497 | 0.0131 | 3.7000e-004 | 0.0135 | | 49.2429 | 49.2429 | 1.9300e-003 | | 49.2911 |
| **Total** | **0.0318** | **0.2616** | **0.2695** | **1.0300e-003** | **0.0628** | **1.1700e-003** | **0.0639** | **0.0170** | **1.1100e-003** | **0.0181** | | **106.7895** | **106.7895** | **4.1300e-003** | | **106.8926** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7103 | 7.3954 | 6.6798 | 0.0106 | | 0.4057 | 0.4057 | | 0.3732 | 0.3732 | 0.0000 | 1,029.2004 | 1,029.2004 | 0.3329 | | 1,037.5220 |
| **Total** | **0.7103** | **7.3954** | **6.6798** | **0.0106** | | **0.4057** | **0.4057** | | **0.3732** | **0.3732** | **0.0000** | **1,029.2004** | **1,029.2004** | **0.3329** | | **1,037.5220** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 6.9000e-003 | 0.2421 | 0.0616 | 5.4000e-004 | 0.0135 | 7.7000e-004 | 0.0143 | 3.8800e-003 | 7.4000e-004 | 4.6200e-003 | | 57.5466 | 57.5466 | 2.2000e-003 | | 57.6016 |
| Worker | 0.0249 | 0.0195 | 0.2079 | 4.9000e-004 | 0.0493 | 4.0000e-004 | 0.0497 | 0.0131 | 3.7000e-004 | 0.0135 | | 49.2429 | 49.2429 | 1.9300e-003 | | 49.2911 |
| **Total** | **0.0318** | **0.2616** | **0.2695** | **1.0300e-003** | **0.0628** | **1.1700e-003** | **0.0639** | **0.0170** | **1.1100e-003** | **0.0181** | | **106.7895** | **106.7895** | **4.1300e-003** | | **106.8926** |

## 3.6 Mobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3600e-003 | 0.0000 | 2.3600e-003 | 2.7000e-004 | 0.0000 | 2.7000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **2.3600e-003** | **0.2266** | **0.2289** | **2.7000e-004** | **0.2084** | **0.2087** | | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0600e-003 | 0.0000 | 1.0600e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | 0.0000 | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **1.0600e-003** | **0.2266** | **0.2276** | **1.2000e-004** | **0.2084** | **0.2086** | **0.0000** | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

# 3.7 Injection line and conduit - 2023

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1000e-003 | 0.0453 | 0.0123 | 1.6000e-004 | 3.4600e-003 | 1.3000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.6237 | 16.6237 | 6.4000e-004 | | 16.6397 |
| Vendor | 0.0101 | 0.3866 | 0.1013 | 1.0600e-003 | 0.0270 | 7.7000e-004 | 0.0277 | 7.7600e-003 | 7.4000e-004 | 8.4900e-003 | | 112.2598 | 112.2598 | 3.8800e-003 | | 112.3567 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0401** | **0.4529** | **0.3456** | **1.8300e-003** | **0.0962** | **1.4000e-003** | **0.0976** | **0.0261** | **1.3300e-003** | **0.0275** | | **189.9525** | **189.9525** | **6.5800e-003** | | **190.1169** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | 0.0000 | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | **0.0000** | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1000e-003 | 0.0453 | 0.0123 | 1.6000e-004 | 3.4600e-003 | 1.3000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.6237 | 16.6237 | 6.4000e-004 | | 16.6397 |
| Vendor | 0.0101 | 0.3866 | 0.1013 | 1.0600e-003 | 0.0270 | 7.7000e-004 | 0.0277 | 7.7600e-003 | 7.4000e-004 | 8.4900e-003 | | 112.2598 | 112.2598 | 3.8800e-003 | | 112.3567 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0401** | **0.4529** | **0.3456** | **1.8300e-003** | **0.0962** | **1.4000e-003** | **0.0976** | **0.0261** | **1.3300e-003** | **0.0275** | | **189.9525** | **189.9525** | **6.5800e-003** | | **190.1169** |

## 3.8 Wellhead piping - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

## 3.9 Facility startup and testing - 2023

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

## 3.10 Final paving and demobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | 0.0000 | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | **0.0000** | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| Unmitigated | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.2800e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | | **1.2000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.2800e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | | **1.2000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 9 Construction
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |
| Other Asphalt Surfaces | 0.40 | 1000sqft | 0.01 | 396.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 9 Construction

Land Use - Surrogate land uses for monitoring well, pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 26 CY of material assumed to be exported and 0.02 acres total disturbed area

Architectural Coating - Default coating EF

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 3.00 |
| tblConstructionPhase | NumDays | 100.00 | 2.00 |
| tblConstructionPhase | PhaseEndDate | 5/3/2021 | 1/13/2023 |
| tblConstructionPhase | PhaseEndDate | 2/9/2022 | 2/3/2023 |
| tblConstructionPhase | PhaseEndDate | 11/16/2022 | 2/10/2023 |
| tblConstructionPhase | PhaseEndDate | 4/5/2023 | 2/17/2023 |
| tblConstructionPhase | PhaseStartDate | 5/3/2021 | 1/9/2023 |
| tblConstructionPhase | PhaseStartDate | 9/23/2021 | 1/30/2023 |
| tblConstructionPhase | PhaseStartDate | 6/30/2022 | 2/6/2023 |
| tblConstructionPhase | PhaseStartDate | 11/17/2022 | 2/13/2023 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |

| | | | |
|---|---|---|---|
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 14.00 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblLandUse | LandUseSquareFeet | 400.00 | 396.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Site prep and conductor casing install |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Injection line and conduit |
| tblOffRoadEquipment | PhaseName | | Wellhead piping |
| tblOffRoadEquipment | PhaseName | | Facility startup and testing |
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |
| tblOffRoadEquipment | PhaseName | | Final paving and demobilization |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

# 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2021 | 2.9132 | 28.3274 | 28.1082 | 0.0634 | 0.1420 | 1.3960 | 1.4821 | 0.0383 | 1.3270 | 1.3502 | 0.0000 | 6,104.9794 | 6,104.9794 | 1.4287 | 0.0000 | 6,140.6978 |
| 2023 | 1.4416 | 15.1095 | 14.6176 | 0.0281 | 0.1443 | 0.4755 | 0.7907 | 0.0385 | 0.4585 | 0.6333 | 0.0000 | 2,736.5925 | 2,736.5925 | 0.8242 | 0.0000 | 2,757.1981 |
| **Maximum** | **2.9132** | **28.3274** | **28.1082** | **0.0634** | **0.1443** | **1.3960** | **1.4821** | **0.0385** | **1.3270** | **1.3502** | **0.0000** | **6,104.9794** | **6,104.9794** | **1.4287** | **0.0000** | **6,140.6978** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2021 | 2.9132 | 28.3274 | 28.1082 | 0.0634 | 0.1420 | 1.3960 | 1.4821 | 0.0383 | 1.3270 | 1.3502 | 0.0000 | 6,104.9794 | 6,104.9794 | 1.4287 | 0.0000 | 6,140.6978 |
| 2023 | 1.4416 | 15.1095 | 14.6176 | 0.0281 | 0.1430 | 0.4755 | 0.7894 | 0.0384 | 0.4585 | 0.6331 | 0.0000 | 2,736.5925 | 2,736.5925 | 0.8242 | 0.0000 | 2,757.1981 |
| **Maximum** | **2.9132** | **28.3274** | **28.1082** | **0.0634** | **0.1430** | **1.3960** | **1.4821** | **0.0384** | **1.3270** | **1.3502** | **0.0000** | **6,104.9794** | **6,104.9794** | **1.4287** | **0.0000** | **6,140.6978** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.45** | **0.00** | **0.06** | **0.20** | **0.00** | **0.01** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | **0.0000** | **1.2000e-004** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | **0.0000** | **1.2000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casing install | Site Preparation | 5/3/2021 | 5/7/2021 | 5 | 5 | |
| 2 | Well drilling and construction | Building Construction | 5/10/2021 | 5/14/2021 | 5 | 5 | |
| 3 | Monitoring well development | Building Construction | 5/17/2021 | 5/19/2021 | 5 | 3 | |
| 4 | Site cleanup | Building Construction | 5/19/2021 | 5/20/2021 | 5 | 2 | |
| 5 | Mobilization | Site Preparation | 1/9/2023 | 1/13/2023 | 5 | 5 | |
| 6 | Injection line and conduit | Trenching | 1/16/2023 | 1/27/2023 | 5 | 10 | |
| 7 | Wellhead piping | Building Construction | 1/30/2023 | 2/3/2023 | 5 | 5 | |
| 8 | Facility startup and testing | Building Construction | 2/6/2023 | 2/10/2023 | 5 | 5 | |
| 9 | Final paving and demobilization | Building Construction | 2/13/2023 | 2/17/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Well drilling and construction | Cranes | 0 | 0.00 | 231 | 0.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Monitoring well development | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Site cleanup | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Well drilling and construction | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Monitoring well development | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Site cleanup | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Site prep and conductor casing install | Graders | | 1 | 8.00 | 187 | 0.41 |
| Well drilling and construction | Tractors/Loaders/Backhoes | | 1 | 24.00 | 97 | 0.37 |
| Monitoring well development | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Site cleanup | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing install | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing install | Bore/Drill Rigs | | 1 | 8.00 | 221 | 0.50 |
| Well drilling and construction | Bore/Drill Rigs | | 1 | 24.00 | 221 | 0.50 |
| Wellhead piping | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Well drilling and construction | Pumps | | 1 | 24.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Monitoring well development | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Monitoring well development | Bore/Drill Rigs | | 1 | 8.00 | 221 | 0.50 |
| Monitoring well development | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Concrete/Industrial Saws | | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | | 1 | 8.00 | 158 | 0.38 |
| Facility startup and testing | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Wellhead piping | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

| | | | | | |
|---|---|---|---|---|---|
| Facility startup and testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well drilling and construction | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Monitoring well development | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site prep and conductor casing install | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casing install - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3300e-003 | 0.0000 | 2.3300e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8984 | 10.8432 | 6.1014 | 0.0192 | | 0.3911 | 0.3911 | | 0.3598 | 0.3598 | | 1,854.6466 | 1,854.6466 | 0.5998 | | 1,869.6424 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.8984** | **10.8432** | **6.1014** | **0.0192** | **2.3300e-003** | **0.3911** | **0.3934** | **2.6000e-004** | **0.3598** | **0.3601** | | **1,854.6466** | **1,854.6466** | **0.5998** | | **1,869.6424** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |
| Worker | 0.0372 | 0.0324 | 0.2808 | 6.3000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 62.5581 | 62.5581 | 2.5000e-003 | | 62.6205 |
| **Total** | **0.0446** | **0.2765** | **0.3508** | **1.1600e-003** | **0.0792** | **1.3500e-003** | **0.0805** | **0.0213** | **1.2700e-003** | **0.0226** | | **118.8955** | **118.8955** | **4.8500e-003** | | **119.0167** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0500e-003 | 0.0000 | 1.0500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8984 | 10.8432 | 6.1014 | 0.0192 | | 0.3911 | 0.3911 | | 0.3598 | 0.3598 | 0.0000 | 1,854.6466 | 1,854.6466 | 0.5998 | | 1,869.6424 |
| **Total** | **0.8984** | **10.8432** | **6.1014** | **0.0192** | **1.0500e-003** | **0.3911** | **0.3922** | **1.2000e-004** | **0.3598** | **0.3599** | **0.0000** | **1,854.6466** | **1,854.6466** | **0.5998** | | **1,869.6424** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |
| Worker | 0.0372 | 0.0324 | 0.2808 | 6.3000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 62.5581 | 62.5581 | 2.5000e-003 | | 62.6205 |
| **Total** | **0.0446** | **0.2765** | **0.3508** | **1.1600e-003** | **0.0792** | **1.3500e-003** | **0.0805** | **0.0213** | **1.2700e-003** | **0.0226** | | **118.8955** | **118.8955** | **4.8500e-003** | | **119.0167** |

## 3.3 Well drilling and construction - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.8656 | 27.9231 | 27.7280 | 0.0619 | | 1.3941 | 1.3941 | | 1.3252 | 1.3252 | | 5,952.0869 | 5,952.0869 | 1.4225 | | 5,987.6488 |
| **Total** | **2.8656** | **27.9231** | **27.7280** | **0.0619** | | **1.3941** | **1.3941** | | **1.3252** | **1.3252** | | **5,952.0869** | **5,952.0869** | **1.4225** | | **5,987.6488** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.1100e-003 | 0.1277 | 0.0294 | 3.2000e-004 | 6.9300e-003 | 5.1000e-004 | 7.4400e-003 | 1.8900e-003 | 4.9000e-004 | 2.3800e-003 | | 33.9969 | 33.9969 | 1.4100e-003 | | 34.0322 |
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0372 | 0.0324 | 0.2808 | 6.3000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 62.5581 | 62.5581 | 2.5000e-003 | | 62.6205 |
| **Total** | **0.0477** | **0.4042** | **0.3802** | **1.4800e-003** | **0.0861** | **1.8600e-003** | **0.0880** | **0.0232** | **1.7600e-003** | **0.0250** | | **152.8924** | **152.8924** | **6.2600e-003** | | **153.0489** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.8656 | 27.9231 | 27.7280 | 0.0619 | | 1.3941 | 1.3941 | | 1.3252 | 1.3252 | 0.0000 | 5,952.0869 | 5,952.0869 | 1.4225 | | 5,987.6488 |
| **Total** | **2.8656** | **27.9231** | **27.7280** | **0.0619** | | **1.3941** | **1.3941** | | **1.3252** | **1.3252** | **0.0000** | **5,952.0869** | **5,952.0869** | **1.4225** | | **5,987.6488** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.1100e-003 | 0.1277 | 0.0294 | 3.2000e-004 | 6.9300e-003 | 5.1000e-004 | 7.4400e-003 | 1.8900e-003 | 4.9000e-004 | 2.3800e-003 | | 33.9969 | 33.9969 | 1.4100e-003 | | 34.0322 |
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |
| Worker | 0.0372 | 0.0324 | 0.2808 | 6.3000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 62.5581 | 62.5581 | 2.5000e-003 | | 62.6205 |
| **Total** | **0.0477** | **0.4042** | **0.3802** | **1.4800e-003** | **0.0861** | **1.8600e-003** | **0.0880** | **0.0232** | **1.7600e-003** | **0.0250** | | **152.8924** | **152.8924** | **6.2600e-003** | | **153.0489** |

## 3.4 Monitoring well development - 2021

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0368 | 9.4039 | 9.3499 | 0.0215 | | 0.4685 | 0.4685 | | 0.4545 | 0.4545 | | 2,058.3919 | 2,058.3919 | 0.4004 | | 2,068.4019 |
| **Total** | **1.0368** | **9.4039** | **9.3499** | **0.0215** | | **0.4685** | **0.4685** | | **0.4545** | **0.4545** | | **2,058.3919** | **2,058.3919** | **0.4004** | | **2,068.4019** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |
| Worker | 0.0372 | 0.0324 | 0.2808 | 6.3000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 62.5581 | 62.5581 | 2.5000e-003 | | 62.6205 |
| **Total** | **0.0446** | **0.2765** | **0.3508** | **1.1600e-003** | **0.0792** | **1.3500e-003** | **0.0805** | **0.0213** | **1.2700e-003** | **0.0226** | | **118.8955** | **118.8955** | **4.8500e-003** | | **119.0167** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.0368 | 9.4039 | 9.3499 | 0.0215 | | 0.4685 | 0.4685 | | 0.4545 | 0.4545 | 0.0000 | 2,058.3919 | 2,058.3919 | 0.4004 | | 2,068.4019 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **1.0368** | **9.4039** | **9.3499** | **0.0215** | | **0.4685** | **0.4685** | | **0.4545** | **0.4545** | **0.0000** | **2,058.3919** | **2,058.3919** | **0.4004** | | **2,068.4019** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |
| Worker | 0.0372 | 0.0324 | 0.2808 | 6.3000e-004 | 0.0657 | 5.4000e-004 | 0.0663 | 0.0174 | 5.0000e-004 | 0.0179 | | 62.5581 | 62.5581 | 2.5000e-003 | | 62.6205 |
| **Total** | **0.0446** | **0.2765** | **0.3508** | **1.1600e-003** | **0.0792** | **1.3500e-003** | **0.0805** | **0.0213** | **1.2700e-003** | **0.0226** | | **118.8955** | **118.8955** | **4.8500e-003** | | **119.0167** |

## 3.5 Site cleanup - 2021

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7103 | 7.3954 | 6.6798 | 0.0106 | | 0.4057 | 0.4057 | | 0.3732 | 0.3732 | | 1,029.2004 | 1,029.2004 | 0.3329 | | 1,037.5220 |
| **Total** | **0.7103** | **7.3954** | **6.6798** | **0.0106** | | **0.4057** | **0.4057** | | **0.3732** | **0.3732** | | **1,029.2004** | **1,029.2004** | **0.3329** | | **1,037.5220** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |
| Worker | 0.0279 | 0.0243 | 0.2106 | 4.7000e-004 | 0.0493 | 4.0000e-004 | 0.0497 | 0.0131 | 3.7000e-004 | 0.0135 | | 46.9185 | 46.9185 | 1.8700e-003 | | 46.9654 |
| **Total** | **0.0353** | **0.2684** | **0.2806** | **1.0000e-003** | **0.0628** | **1.2100e-003** | **0.0640** | **0.0170** | **1.1400e-003** | **0.0181** | | **103.2560** | **103.2560** | **4.2200e-003** | | **103.3616** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7103 | 7.3954 | 6.6798 | 0.0106 | | 0.4057 | 0.4057 | | 0.3732 | 0.3732 | 0.0000 | 1,029.2004 | 1,029.2004 | 0.3329 | | 1,037.5220 |
| **Total** | **0.7103** | **7.3954** | **6.6798** | **0.0106** | | **0.4057** | **0.4057** | | **0.3732** | **0.3732** | **0.0000** | **1,029.2004** | **1,029.2004** | **0.3329** | | **1,037.5220** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 7.3400e-003 | 0.2441 | 0.0700 | 5.3000e-004 | 0.0135 | 8.1000e-004 | 0.0143 | 3.8800e-003 | 7.7000e-004 | 4.6500e-003 | | 56.3375 | 56.3375 | 2.3500e-003 | | 56.3962 |
| Worker | 0.0279 | 0.0243 | 0.2106 | 4.7000e-004 | 0.0493 | 4.0000e-004 | 0.0497 | 0.0131 | 3.7000e-004 | 0.0135 | | 46.9185 | 46.9185 | 1.8700e-003 | | 46.9654 |
| **Total** | **0.0353** | **0.2684** | **0.2806** | **1.0000e-003** | **0.0628** | **1.2100e-003** | **0.0640** | **0.0170** | **1.1400e-003** | **0.0181** | | **103.2560** | **103.2560** | **4.2200e-003** | | **103.3616** |

## 3.6 Mobilization - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3600e-003 | 0.0000 | 2.3600e-003 | 2.7000e-004 | 0.0000 | 2.7000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **2.3600e-003** | **0.2266** | **0.2289** | **2.7000e-004** | **0.2084** | **0.2087** | | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

**Mitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0600e-003 | 0.0000 | 1.0600e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | 0.0000 | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **1.0600e-003** | **0.2266** | **0.2276** | **1.2000e-004** | **0.2084** | **0.2086** | **0.0000** | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

**Mitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

## 3.7 Injection line and conduit - 2023

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1300e-003 | 0.0461 | 0.0129 | 1.5000e-004 | 3.4600e-003 | 1.4000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.3928 | 16.3928 | 6.6000e-004 | | 16.4093 |
| Vendor | 0.0108 | 0.3884 | 0.1145 | 1.0400e-003 | 0.0270 | 8.2000e-004 | 0.0278 | 7.7600e-003 | 7.8000e-004 | 8.5400e-003 | | 109.8447 | 109.8447 | 4.1300e-003 | | 109.9480 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0444** | **0.4606** | **0.3609** | **1.7700e-003** | **0.0962** | **1.4600e-003** | **0.0976** | **0.0261** | **1.3700e-003** | **0.0275** | | **184.4241** | **184.4241** | **6.7800e-003** | | **184.5937** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | 0.0000 | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | **0.0000** | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | lb/day | | | | | | | | lb/day | | | |
| Hauling | 1.1300e-003 | 0.0461 | 0.0129 | 1.5000e-004 | 3.4600e-003 | 1.4000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.3928 | 16.3928 | 6.6000e-004 | | 16.4093 |
| Vendor | 0.0108 | 0.3884 | 0.1145 | 1.0400e-003 | 0.0270 | 8.2000e-004 | 0.0278 | 7.7600e-003 | 7.8000e-004 | 8.5400e-003 | | 109.8447 | 109.8447 | 4.1300e-003 | | 109.9480 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0444** | **0.4606** | **0.3609** | **1.7700e-003** | **0.0962** | **1.4600e-003** | **0.0976** | **0.0261** | **1.3700e-003** | **0.0275** | | **184.4241** | **184.4241** | **6.7800e-003** | | **184.5937** |

## 3.8 Wellhead piping - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | lb/day | | | | | | | | lb/day | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | lb/day | | | | | | | | lb/day | | | |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

## 3.9 Facility startup and testing - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

## 3.10 Final paving and demobilization - 2023

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8392 | 8.4867 | 10.1707 | 0.0163 | | 0.4182 | 0.4182 | | 0.3847 | 0.3847 | 0.0000 | 1,582.4895 | 1,582.4895 | 0.5118 | | 1,595.2847 |
| **Total** | **0.8392** | **8.4867** | **10.1707** | **0.0163** | | **0.4182** | **0.4182** | | **0.3847** | **0.3847** | **0.0000** | **1,582.4895** | **1,582.4895** | **0.5118** | | **1,595.2847** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| Unmitigated | 2.3300e-003 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.2800e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | | **1.2000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 5.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.2800e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 5.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 1.1000e-004 | 1.1000e-004 | 0.0000 | | 1.2000e-004 |
| **Total** | **2.3300e-003** | **0.0000** | **5.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **1.1000e-004** | **1.1000e-004** | **0.0000** | | **1.2000e-004** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 10 Construction
**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.37 | 1000sqft | 0.01 | 373.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 10 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 13 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 2/20/2023 | 2/24/2023 |
| tblConstructionPhase | PhaseEndDate | 11/29/2023 | 3/17/2023 |
| tblConstructionPhase | PhaseEndDate | 9/4/2024 | 3/24/2023 |
| tblConstructionPhase | PhaseEndDate | 1/22/2025 | 3/31/2023 |
| tblConstructionPhase | PhaseStartDate | 7/13/2023 | 3/13/2023 |
| tblConstructionPhase | PhaseStartDate | 4/18/2024 | 3/20/2023 |
| tblConstructionPhase | PhaseStartDate | 9/5/2024 | 3/27/2023 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 13.00 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.36 | 0.36 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2023 | 0.0124 | 0.1159 | 0.1381 | 2.5000e-004 | 1.1600e-003 | 5.3300e-003 | 6.4800e-003 | 3.1000e-004 | 5.0600e-003 | 5.3700e-003 | 0.0000 | 22.1086 | 22.1086 | 4.3200e-003 | 0.0000 | 22.2166 |
| **Maximum** | **0.0124** | **0.1159** | **0.1381** | **2.5000e-004** | **1.1600e-003** | **5.3300e-003** | **6.4800e-003** | **3.1000e-004** | **5.0600e-003** | **5.3700e-003** | **0.0000** | **22.1086** | **22.1086** | **4.3200e-003** | **0.0000** | **22.2166** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2023 | 0.0124 | 0.1159 | 0.1381 | 2.5000e-004 | 1.1500e-003 | 5.3300e-003 | 6.4800e-003 | 3.1000e-004 | 5.0600e-003 | 5.3700e-003 | 0.0000 | 22.1086 | 22.1086 | 4.3200e-003 | 0.0000 | 22.2166 |
| **Maximum** | **0.0124** | **0.1159** | **0.1381** | **2.5000e-004** | **1.1500e-003** | **5.3300e-003** | **6.4800e-003** | **3.1000e-004** | **5.0600e-003** | **5.3700e-003** | **0.0000** | **22.1086** | **22.1086** | **4.3200e-003** | **0.0000** | **22.2166** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.86** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| **Quarter** | **Start Date** | **End Date** | **Maximum Unmitigated ROG + NOX (tons/quarter)** | **Maximum Mitigated ROG + NOX (tons/quarter)** |
|---|---|---|---|---|
| **1** | **2-20-2023** | **5-19-2023** | 0.0995 | 0.0995 |
| | | **Highest** | 0.0995 | 0.0995 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 2/20/2023 | 2/24/2023 | 5 | 5 | |
| 2 | Injection line and conduit | Trenching | 2/27/2023 | 3/10/2023 | 5 | 10 | |
| 3 | Wellhead piping | Building Construction | 3/13/2023 | 3/17/2023 | 5 | 5 | |
| 4 | Facility startup and testing | Building Construction | 3/20/2023 | 3/24/2023 | 5 | 5 | |
| 5 | Final paving and demobilization | Building Construction | 3/27/2023 | 3/31/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Injection line and conduit | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Wellhead piping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Facility startup and testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

| | | | | | |
|---|---|---|---|---|---|
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.3400e-003 | 0.0155 | 9.8100e-003 | 2.0000e-005 | | 5.7000e-004 | 5.7000e-004 | | 5.2000e-004 | 5.2000e-004 | 0.0000 | 2.1374 | 2.1374 | 6.9000e-004 | 0.0000 | 2.1547 |
| **Total** | **1.3400e-003** | **0.0155** | **9.8100e-003** | **2.0000e-005** | **1.0000e-005** | **5.7000e-004** | **5.8000e-004** | **0.0000** | **5.2000e-004** | **5.2000e-004** | **0.0000** | **2.1374** | **2.1374** | **6.9000e-004** | **0.0000** | **2.1547** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.3400e-003 | 0.0155 | 9.8100e-003 | 2.0000e-005 | | 5.7000e-004 | 5.7000e-004 | | 5.2000e-004 | 5.2000e-004 | 0.0000 | 2.1374 | 2.1374 | 6.9000e-004 | 0.0000 | 2.1547 |
| **Total** | **1.3400e-003** | **0.0155** | **9.8100e-003** | **2.0000e-005** | **0.0000** | **5.7000e-004** | **5.7000e-004** | **0.0000** | **5.2000e-004** | **5.2000e-004** | **0.0000** | **2.1374** | **2.1374** | **6.9000e-004** | **0.0000** | **2.1547** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## 3.3 Injection line and conduit - 2023

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.5200e-003 | 0.0469 | 0.0701 | 1.1000e-004 | | 2.3700e-003 | 2.3700e-003 | | 2.2900e-003 | 2.2900e-003 | 0.0000 | 9.8222 | 9.8222 | 1.6500e-003 | 0.0000 | 9.8635 |
| **Total** | **5.5200e-003** | **0.0469** | **0.0701** | **1.1000e-004** | | **2.3700e-003** | **2.3700e-003** | | **2.2900e-003** | **2.2900e-003** | **0.0000** | **9.8222** | **9.8222** | **1.6500e-003** | **0.0000** | **9.8635** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.3000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0750 | 0.0750 | 0.0000 | 0.0000 | 0.0750 |
| Vendor | 5.0000e-005 | 1.9500e-003 | 5.4000e-004 | 1.0000e-005 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.5046 | 0.5046 | 2.0000e-005 | 0.0000 | 0.5051 |
| Worker | 1.5000e-004 | 1.2000e-004 | 1.1200e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2642 | 0.2642 | 1.0000e-005 | 0.0000 | 0.2644 |

| Total | 2.1000e-004 | 2.3000e-003 | 1.7200e-003 | 1.0000e-005 | 4.7000e-004 | 0.0000 | 4.7000e-004 | 1.2000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 0.8437 | 0.8437 | 3.0000e-005 | 0.0000 | 0.8445 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.5200e-003 | 0.0469 | 0.0701 | 1.1000e-004 | | 2.3700e-003 | 2.3700e-003 | | 2.2900e-003 | 2.2900e-003 | 0.0000 | 9.8221 | 9.8221 | 1.6500e-003 | 0.0000 | 9.8635 |
| **Total** | **5.5200e-003** | **0.0469** | **0.0701** | **1.1000e-004** | | **2.3700e-003** | **2.3700e-003** | | **2.2900e-003** | **2.2900e-003** | **0.0000** | **9.8221** | **9.8221** | **1.6500e-003** | **0.0000** | **9.8635** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.3000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0750 | 0.0750 | 0.0000 | 0.0000 | 0.0750 |
| Vendor | 5.0000e-005 | 1.9500e-003 | 5.4000e-004 | 1.0000e-005 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.5046 | 0.5046 | 2.0000e-005 | 0.0000 | 0.5051 |
| Worker | 1.5000e-004 | 1.2000e-004 | 1.1200e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2642 | 0.2642 | 1.0000e-005 | 0.0000 | 0.2644 |
| **Total** | **2.1000e-004** | **2.3000e-003** | **1.7200e-003** | **1.0000e-005** | **4.7000e-004** | **0.0000** | **4.7000e-004** | **1.2000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **0.8437** | **0.8437** | **3.0000e-005** | **0.0000** | **0.8445** |

## 3.4 Wellhead piping - 2023

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
| **Total** | **1.4600e-003** | **0.0140** | **0.0143** | **3.0000e-005** | | **6.7000e-004** | **6.7000e-004** | | **6.4000e-004** | **6.4000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.8000e-004** | **0.0000** | **2.3918** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
| **Total** | **1.4600e-003** | **0.0140** | **0.0143** | **3.0000e-005** | | **6.7000e-004** | **6.7000e-004** | | **6.4000e-004** | **6.4000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.8000e-004** | **0.0000** | **2.3918** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 7.0000e-005 | 6.0000e-005 | 5.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1321 | 0.1321 | 0.0000 | 0.0000 | 0.1322 |
| **Total** | **8.0000e-005** | **5.5000e-004** | **6.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2582** | **0.2582** | **0.0000** | **0.0000** | **0.2585** |

## 3.5 Facility startup and testing - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
| **Total** | **1.4600e-003** | **0.0140** | **0.0143** | **3.0000e-005** | | **6.7000e-004** | **6.7000e-004** | | **6.4000e-004** | **6.4000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.8000e-004** | **0.0000** | **2.3918** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.4600e-003 | 0.0140 | 0.0143 | 3.0000e-005 | | 6.7000e-004 | 6.7000e-004 | | 6.4000e-004 | 6.4000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.8000e-004 | 0.0000 | 2.3918 |
| **Total** | **1.4600e-003** | **0.0140** | **0.0143** | **3.0000e-005** | | **6.7000e-004** | **6.7000e-004** | | **6.4000e-004** | **6.4000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.8000e-004** | **0.0000** | **2.3918** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## 3.6 Final paving and demobilization - 2023

### Unmitigated Construction On-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.0900e-003 | 0.0211 | 0.0253 | 4.0000e-005 | | 1.0400e-003 | 1.0400e-003 | | 9.6000e-004 | 9.6000e-004 | 0.0000 | 3.5736 | 3.5736 | 1.1600e-003 | 0.0000 | 3.6025 |
| **Total** | **2.0900e-003** | **0.0211** | **0.0253** | **4.0000e-005** | | **1.0400e-003** | **1.0400e-003** | | **9.6000e-004** | **9.6000e-004** | **0.0000** | **3.5736** | **3.5736** | **1.1600e-003** | **0.0000** | **3.6025** |

### Unmitigated Construction Off-Site

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.0900e-003 | 0.0211 | 0.0253 | 4.0000e-005 | | 1.0400e-003 | 1.0400e-003 | | 9.6000e-004 | 9.6000e-004 | 0.0000 | 3.5736 | 3.5736 | 1.1600e-003 | 0.0000 | 3.6025 |
| **Total** | **2.0900e-003** | **0.0211** | **0.0253** | **4.0000e-005** | | **1.0400e-003** | **1.0400e-003** | | **9.6000e-004** | **9.6000e-004** | **0.0000** | **3.5736** | **3.5736** | **1.1600e-003** | **0.0000** | **3.6025** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.9000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1262 | 0.1262 | 0.0000 | 0.0000 | 0.1263 |
| Worker | 5.0000e-005 | 4.0000e-005 | 4.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0991 | 0.0991 | 0.0000 | 0.0000 | 0.0991 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **5.5000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2252** | **0.2252** | **0.0000** | **0.0000** | **0.2254** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Unmitigated | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 2.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 2.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 10 Construction

**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.37 | 1000sqft | 0.01 | 373.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 10 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 13 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 2/20/2023 | 2/24/2023 |
| tblConstructionPhase | PhaseEndDate | 11/29/2023 | 3/17/2023 |
| tblConstructionPhase | PhaseEndDate | 9/4/2024 | 3/24/2023 |
| tblConstructionPhase | PhaseEndDate | 1/22/2025 | 3/31/2023 |
| tblConstructionPhase | PhaseStartDate | 7/13/2023 | 3/13/2023 |
| tblConstructionPhase | PhaseStartDate | 4/18/2024 | 3/20/2023 |
| tblConstructionPhase | PhaseStartDate | 9/5/2024 | 3/27/2023 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 13.00 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.36 | 0.36 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2023 | 1.4315 | 15.0673 | 14.5570 | 0.0281 | 0.1443 | 0.4755 | 0.7891 | 0.0385 | 0.4585 | 0.6318 | 0.0000 | 2,737.2693 | 2,737.2693 | 0.8219 | 0.0000 | 2,757.8168 |
| **Maximum** | **1.4315** | **15.0673** | **14.5570** | **0.0281** | **0.1443** | **0.4755** | **0.7891** | **0.0385** | **0.4585** | **0.6318** | **0.0000** | **2,737.2693** | **2,737.2693** | **0.8219** | **0.0000** | **2,757.8168** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2023 | 1.4315 | 15.0673 | 14.5570 | 0.0281 | 0.1430 | 0.4755 | 0.7878 | 0.0384 | 0.4585 | 0.6316 | 0.0000 | 2,737.2693 | 2,737.2693 | 0.8219 | 0.0000 | 2,757.8168 |
| **Maximum** | **1.4315** | **15.0673** | **14.5570** | **0.0281** | **0.1430** | **0.4755** | **0.7878** | **0.0384** | **0.4585** | **0.6316** | **0.0000** | **2,737.2693** | **2,737.2693** | **0.8219** | **0.0000** | **2,757.8168** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.89** | **0.00** | **0.16** | **0.36** | **0.00** | **0.02** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.8000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.8000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 2/20/2023 | 2/24/2023 | 5 | 5 | |
| 2 | Injection line and conduit | Trenching | 2/27/2023 | 3/10/2023 | 5 | 10 | |
| 3 | Wellhead piping | Building Construction | 3/13/2023 | 3/17/2023 | 5 | 5 | |
| 4 | Facility startup and testing | Building Construction | 3/20/2023 | 3/24/2023 | 5 | 5 | |
| 5 | Final paving and demobilization | Building Construction | 3/27/2023 | 3/31/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Injection line and conduit | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Wellhead piping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Facility startup and testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3500e-003 | 0.0000 | 2.3500e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **2.3500e-003** | **0.2266** | **0.2289** | **2.6000e-004** | **0.2084** | **0.2087** | | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0600e-003 | 0.0000 | 1.0600e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | 0.0000 | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **1.0600e-003** | **0.2266** | **0.2276** | **1.2000e-004** | **0.2084** | **0.2086** | **0.0000** | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

## 3.3 Injection line and conduit - 2023

## Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1000e-003 | 0.0453 | 0.0123 | 1.6000e-004 | 3.4600e-003 | 1.3000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.6237 | 16.6237 | 6.4000e-004 | | 16.6397 |
| Vendor | 0.0101 | 0.3866 | 0.1013 | 1.0600e-003 | 0.0270 | 7.7000e-004 | 0.0277 | 7.7600e-003 | 7.4000e-004 | 8.4900e-003 | | 112.2598 | 112.2598 | 3.8800e-003 | | 112.3567 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0401** | **0.4529** | **0.3456** | **1.8300e-003** | **0.0962** | **1.4000e-003** | **0.0976** | **0.0261** | **1.3300e-003** | **0.0275** | | **189.9525** | **189.9525** | **6.5800e-003** | | **190.1169** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | 0.0000 | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | **0.0000** | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1000e-003 | 0.0453 | 0.0123 | 1.6000e-004 | 3.4600e-003 | 1.3000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.6237 | 16.6237 | 6.4000e-004 | | 16.6397 |
| Vendor | 0.0101 | 0.3866 | 0.1013 | 1.0600e-003 | 0.0270 | 7.7000e-004 | 0.0277 | 7.7600e-003 | 7.4000e-004 | 8.4900e-003 | | 112.2598 | 112.2598 | 3.8800e-003 | | 112.3567 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0401** | **0.4529** | **0.3456** | **1.8300e-003** | **0.0962** | **1.4000e-003** | **0.0976** | **0.0261** | **1.3300e-003** | **0.0275** | | **189.9525** | **189.9525** | **6.5800e-003** | | **190.1169** |

## 3.4 Wellhead piping - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0289 | 0.0210 | 0.2319 | 6.1000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 61.0690 | 61.0690 | 2.0600e-003 | | 61.1205 |
| **Total** | **0.0340** | **0.2143** | **0.2826** | **1.1400e-003** | **0.0792** | **8.9000e-004** | **0.0801** | **0.0213** | **8.3000e-004** | **0.0221** | | **117.1989** | **117.1989** | **4.0000e-003** | | **117.2989** |

## 3.5 Facility startup and testing - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

# 3.6 Final paving and demobilization - 2023

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.8360 | 8.4553 | 10.1258 | 0.0163 | | 0.4166 | 0.4166 | | 0.3833 | 0.3833 | | 1,575.7072 | 1,575.7072 | 0.5096 | | 1,588.4476 |
| **Total** | **0.8360** | **8.4553** | **10.1258** | **0.0163** | | **0.4166** | **0.4166** | | **0.3833** | **0.3833** | | **1,575.7072** | **1,575.7072** | **0.5096** | | **1,588.4476** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8360 | 8.4553 | 10.1258 | 0.0163 | | 0.4166 | 0.4166 | | 0.3833 | 0.3833 | 0.0000 | 1,575.7072 | 1,575.7072 | 0.5096 | | 1,588.4476 |
| **Total** | **0.8360** | **8.4553** | **10.1258** | **0.0163** | | **0.4166** | **0.4166** | | **0.3833** | **0.3833** | **0.0000** | **1,575.7072** | **1,575.7072** | **0.5096** | | **1,588.4476** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0300e-003 | 0.1933 | 0.0507 | 5.3000e-004 | 0.0135 | 3.9000e-004 | 0.0139 | 3.8800e-003 | 3.7000e-004 | 4.2500e-003 | | 56.1299 | 56.1299 | 1.9400e-003 | | 56.1783 |
| Worker | 0.0217 | 0.0157 | 0.1740 | 4.6000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 45.8018 | 45.8018 | 1.5500e-003 | | 45.8404 |
| **Total** | **0.0267** | **0.2090** | **0.2246** | **9.9000e-004** | **0.0628** | **7.7000e-004** | **0.0635** | **0.0170** | **7.2000e-004** | **0.0177** | | **101.9316** | **101.9316** | **3.4900e-003** | | **102.0187** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | Unmitigated | Mitigated |
|---|---|---|---|

| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| Unmitigated | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.3000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.7000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | | **9.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.3000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.7000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | | **9.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 10 Construction

## Santa Cruz County, Winter

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.37 | 1000sqft | 0.01 | 373.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 10 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 13 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 2/20/2023 | 2/24/2023 |
| tblConstructionPhase | PhaseEndDate | 11/29/2023 | 3/17/2023 |
| tblConstructionPhase | PhaseEndDate | 9/4/2024 | 3/24/2023 |
| tblConstructionPhase | PhaseEndDate | 1/22/2025 | 3/31/2023 |
| tblConstructionPhase | PhaseStartDate | 7/13/2023 | 3/13/2023 |
| tblConstructionPhase | PhaseStartDate | 4/18/2024 | 3/20/2023 |
| tblConstructionPhase | PhaseStartDate | 9/5/2024 | 3/27/2023 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 13.00 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.36 | 0.36 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2023 | 1.4384 | 15.0781 | 14.5728 | 0.0281 | 0.1443 | 0.4755 | 0.7892 | 0.0385 | 0.4585 | 0.6318 | 0.0000 | 2,729.8102 | 2,729.8102 | 0.8220 | 0.0000 | 2,750.3610 |
| **Maximum** | **1.4384** | **15.0781** | **14.5728** | **0.0281** | **0.1443** | **0.4755** | **0.7892** | **0.0385** | **0.4585** | **0.6318** | **0.0000** | **2,729.8102** | **2,729.8102** | **0.8220** | **0.0000** | **2,750.3610** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2023 | 1.4384 | 15.0781 | 14.5728 | 0.0281 | 0.1430 | 0.4755 | 0.7879 | 0.0384 | 0.4585 | 0.6317 | 0.0000 | 2,729.8102 | 2,729.8102 | 0.8220 | 0.0000 | 2,750.3610 |
| **Maximum** | **1.4384** | **15.0781** | **14.5728** | **0.0281** | **0.1430** | **0.4755** | **0.7879** | **0.0384** | **0.4585** | **0.6317** | **0.0000** | **2,729.8102** | **2,729.8102** | **0.8220** | **0.0000** | **2,750.3610** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.89** | **0.00** | **0.16** | **0.36** | **0.00** | **0.02** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.8000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.8000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | **0.0000** | **9.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 2/20/2023 | 2/24/2023 | 5 | 5 | |
| 2 | Injection line and conduit | Trenching | 2/27/2023 | 3/10/2023 | 5 | 10 | |
| 3 | Wellhead piping | Building Construction | 3/13/2023 | 3/17/2023 | 5 | 5 | |
| 4 | Facility startup and testing | Building Construction | 3/20/2023 | 3/24/2023 | 5 | 5 | |
| 5 | Final paving and demobilization | Building Construction | 3/27/2023 | 3/31/2023 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Injection line and conduit | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Wellhead piping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Facility startup and testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3500e-003 | 0.0000 | 2.3500e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **2.3500e-003** | **0.2266** | **0.2289** | **2.6000e-004** | **0.2084** | **0.2087** | | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0600e-003 | 0.0000 | 1.0600e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5348 | 6.1887 | 3.9239 | 9.7300e-003 | | 0.2266 | 0.2266 | | 0.2084 | 0.2084 | 0.0000 | 942.4317 | 942.4317 | 0.3048 | | 950.0517 |
| **Total** | **0.5348** | **6.1887** | **3.9239** | **9.7300e-003** | **1.0600e-003** | **0.2266** | **0.2276** | **1.2000e-004** | **0.2084** | **0.2086** | **0.0000** | **942.4317** | **942.4317** | **0.3048** | | **950.0517** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

## 3.3 Injection line and conduit - 2023

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1300e-003 | 0.0461 | 0.0129 | 1.5000e-004 | 3.4600e-003 | 1.4000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.3928 | 16.3928 | 6.6000e-004 | | 16.4093 |
| Vendor | 0.0108 | 0.3884 | 0.1145 | 1.0400e-003 | 0.0270 | 8.2000e-004 | 0.0278 | 7.7600e-003 | 7.8000e-004 | 8.5400e-003 | | 109.8447 | 109.8447 | 4.1300e-003 | | 109.9480 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0444** | **0.4606** | **0.3609** | **1.7700e-003** | **0.0962** | **1.4600e-003** | **0.0976** | **0.0261** | **1.3700e-003** | **0.0275** | | **184.4241** | **184.4241** | **6.7800e-003** | | **184.5937** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.1041 | 9.3811 | 14.0165 | 0.0227 | | 0.4740 | 0.4740 | | 0.4572 | 0.4572 | 0.0000 | 2,165.4132 | 2,165.4132 | 0.3649 | | 2,174.5347 |
| **Total** | **1.1041** | **9.3811** | **14.0165** | **0.0227** | | **0.4740** | **0.4740** | | **0.4572** | **0.4572** | **0.0000** | **2,165.4132** | **2,165.4132** | **0.3649** | | **2,174.5347** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1300e-003 | 0.0461 | 0.0129 | 1.5000e-004 | 3.4600e-003 | 1.4000e-004 | 3.6000e-003 | 9.5000e-004 | 1.3000e-004 | 1.0800e-003 | | 16.3928 | 16.3928 | 6.6000e-004 | | 16.4093 |
| Vendor | 0.0108 | 0.3884 | 0.1145 | 1.0400e-003 | 0.0270 | 8.2000e-004 | 0.0278 | 7.7600e-003 | 7.8000e-004 | 8.5400e-003 | | 109.8447 | 109.8447 | 4.1300e-003 | | 109.9480 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0444** | **0.4606** | **0.3609** | **1.7700e-003** | **0.0962** | **1.4600e-003** | **0.0976** | **0.0261** | **1.3700e-003** | **0.0275** | | **184.4241** | **184.4241** | **6.7800e-003** | | **184.5937** |

## 3.4 Wellhead piping - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0325 | 0.0261 | 0.2335 | 5.8000e-004 | 0.0657 | 5.0000e-004 | 0.0662 | 0.0174 | 4.6000e-004 | 0.0179 | | 58.1867 | 58.1867 | 1.9900e-003 | | 58.2364 |
| **Total** | **0.0379** | **0.2203** | **0.2907** | **1.1000e-003** | **0.0792** | **9.1000e-004** | **0.0801** | **0.0213** | **8.5000e-004** | **0.0222** | | **113.1090** | **113.1090** | **4.0600e-003** | | **113.2104** |

## 3.5 Facility startup and testing - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5841 | 5.5830 | 5.7314 | 0.0110 | | 0.2672 | 0.2672 | | 0.2561 | 0.2561 | 0.0000 | 1,050.4750 | 1,050.4750 | 0.1657 | | 1,054.6163 |
| **Total** | **0.5841** | **5.5830** | **5.7314** | **0.0110** | | **0.2672** | **0.2672** | | **0.2561** | **0.2561** | **0.0000** | **1,050.4750** | **1,050.4750** | **0.1657** | | **1,054.6163** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

# 3.6 Final paving and demobilization - 2023

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.8360 | 8.4553 | 10.1258 | 0.0163 | | 0.4166 | 0.4166 | | 0.3833 | 0.3833 | | 1,575.7072 | 1,575.7072 | 0.5096 | | 1,588.4476 |
| **Total** | **0.8360** | **8.4553** | **10.1258** | **0.0163** | | **0.4166** | **0.4166** | | **0.3833** | **0.3833** | | **1,575.7072** | **1,575.7072** | **0.5096** | | **1,588.4476** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8360 | 8.4553 | 10.1258 | 0.0163 | | 0.4166 | 0.4166 | | 0.3833 | 0.3833 | 0.0000 | 1,575.7072 | 1,575.7072 | 0.5096 | | 1,588.4476 |
| **Total** | **0.8360** | **8.4553** | **10.1258** | **0.0163** | | **0.4166** | **0.4166** | | **0.3833** | **0.3833** | **0.0000** | **1,575.7072** | **1,575.7072** | **0.5096** | | **1,588.4476** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.3700e-003 | 0.1942 | 0.0572 | 5.2000e-004 | 0.0135 | 4.1000e-004 | 0.0139 | 3.8800e-003 | 3.9000e-004 | 4.2700e-003 | | 54.9224 | 54.9224 | 2.0700e-003 | | 54.9740 |
| Worker | 0.0244 | 0.0196 | 0.1751 | 4.4000e-004 | 0.0493 | 3.8000e-004 | 0.0497 | 0.0131 | 3.5000e-004 | 0.0134 | | 43.6400 | 43.6400 | 1.4900e-003 | | 43.6773 |
| **Total** | **0.0298** | **0.2138** | **0.2323** | **9.6000e-004** | **0.0628** | **7.9000e-004** | **0.0636** | **0.0170** | **7.4000e-004** | **0.0177** | | **98.5623** | **98.5623** | **3.5600e-003** | | **98.6513** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | Unmitigated | Mitigated |
|---|---|---|---|

| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |
| Other Asphalt Surfaces | 0.581303 | 0.027509 | 0.206400 | 0.116089 | 0.018972 | 0.004711 | 0.021162 | 0.012551 | 0.001232 | 0.002512 | 0.005585 | 0.000994 | 0.000981 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| Unmitigated | 1.8000e-004 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.3000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.7000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | | **9.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.3000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Landscaping | 0.0000 | 0.0000 | 4.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | 0.0000 | | 9.0000e-005 |
| **Total** | **1.7000e-004** | **0.0000** | **4.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **8.0000e-005** | **8.0000e-005** | **0.0000** | | **9.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**<u>Fire Pumps and Emergency Generators</u>**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**<u>Boilers</u>**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**<u>User Defined Equipment</u>**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 12 Construction
**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.33 | 1000sqft | 0.01 | 326.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 12 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 11 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 11/22/2022 | 8/19/2022 |
| tblConstructionPhase | PhaseEndDate | 4/11/2023 | 9/2/2022 |
| tblConstructionPhase | PhaseEndDate | 8/29/2023 | 9/9/2022 |
| tblConstructionPhase | PhaseEndDate | 7/5/2022 | 7/11/2022 |
| tblConstructionPhase | PhaseStartDate | 7/6/2022 | 8/15/2022 |
| tblConstructionPhase | PhaseStartDate | 11/23/2022 | 8/29/2022 |
| tblConstructionPhase | PhaseStartDate | 4/12/2023 | 9/5/2022 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 11.00 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.20 | 0.20 |
| tblOffRoadEquipment | LoadFactor | 0.37 | 0.37 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.36 | 0.36 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 1.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0201 | 0.1925 | 0.2021 | 3.8000e-004 | 1.9500e-003 | 9.2700e-003 | 0.0112 | 5.3000e-004 | 8.8000e-003 | 9.3300e-003 | 0.0000 | 32.8601 | 32.8601 | 6.3100e-003 | 0.0000 | 33.0179 |
| **Maximum** | **0.0201** | **0.1925** | **0.2021** | **3.8000e-004** | **1.9500e-003** | **9.2700e-003** | **0.0112** | **5.3000e-004** | **8.8000e-003** | **9.3300e-003** | **0.0000** | **32.8601** | **32.8601** | **6.3100e-003** | **0.0000** | **33.0179** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | 0.0201 | 0.1925 | 0.2021 | 3.8000e-004 | 1.9500e-003 | 9.2700e-003 | 0.0112 | 5.3000e-004 | 8.8000e-003 | 9.3300e-003 | 0.0000 | 32.8601 | 32.8601 | 6.3100e-003 | 0.0000 | 33.0178 |
| **Maximum** | **0.0201** | **0.1925** | **0.2021** | **3.8000e-004** | **1.9500e-003** | **9.2700e-003** | **0.0112** | **5.3000e-004** | **8.8000e-003** | **9.3300e-003** | **0.0000** | **32.8601** | **32.8601** | **6.3100e-003** | **0.0000** | **33.0178** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **7-5-2022** | **9-30-2022** | 0.1845 | 0.1845 |
| | | **Highest** | 0.1845 | 0.1845 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 7/5/2022 | 7/11/2022 | 5 | 5 | |
| 2 | Injection line and conduit | Trenching | 7/12/2022 | 7/25/2022 | 5 | 10 | |
| 3 | Filters | Building Construction | 7/25/2022 | 8/12/2022 | 5 | 15 | |
| 4 | Wellhead piping | Building Construction | 8/15/2022 | 8/19/2022 | 5 | 5 | |
| 5 | Building equipment upgrades | Building Construction | 8/22/2022 | 8/26/2022 | 5 | 5 | |
| 6 | Facility startup and testing | Building Construction | 8/29/2022 | 9/2/2022 | 5 | 5 | |
| 7 | Final paving and demobilization | Building Construction | 9/5/2022 | 9/9/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Filters | Cranes | 1 | 4.00 | 231 | 0.29 |
| Building equipment upgrades | Cranes | 1 | 4.00 | 231 | 0.29 |
| Filters | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building equipment upgrades | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Filters | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Building equipment upgrades | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Injection line and conduit | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Filters | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Cranes | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building equipment upgrades | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Final paving and demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Filters | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building equipment upgrades | 3 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.4500e-003 | 0.0173 | 9.9000e-003 | 2.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.1376 | 2.1376 | 6.9000e-004 | 0.0000 | 2.1549 |
| **Total** | **1.4500e-003** | **0.0173** | **9.9000e-003** | **2.0000e-005** | **1.0000e-005** | **6.4000e-004** | **6.5000e-004** | **0.0000** | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.1376** | **2.1376** | **6.9000e-004** | **0.0000** | **2.1549** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.4500e-003 | 0.0173 | 9.9000e-003 | 2.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.1376 | 2.1376 | 6.9000e-004 | 0.0000 | 2.1549 |
| **Total** | **1.4500e-003** | **0.0173** | **9.9000e-003** | **2.0000e-005** | **0.0000** | **6.4000e-004** | **6.4000e-004** | **0.0000** | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.1376** | **2.1376** | **6.9000e-004** | **0.0000** | **2.1549** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## 3.3 Injection line and conduit - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.9600e-003 | 0.0514 | 0.0703 | 1.1000e-004 | | 2.7600e-003 | 2.7600e-003 | | 2.6600e-003 | 2.6600e-003 | 0.0000 | 9.8294 | 9.8294 | 1.6900e-003 | 0.0000 | 9.8715 |
| **Total** | **5.9600e-003** | **0.0514** | **0.0703** | **1.1000e-004** | | **2.7600e-003** | **2.7600e-003** | | **2.6600e-003** | **2.6600e-003** | **0.0000** | **9.8294** | **9.8294** | **1.6900e-003** | **0.0000** | **9.8715** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.9000e-004 | 7.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0768 | 0.0768 | 0.0000 | 0.0000 | 0.0769 |
| Vendor | 7.0000e-005 | 2.3200e-003 | 6.0000e-004 | 1.0000e-005 | 1.3000e-004 | 1.0000e-005 | 1.4000e-004 | 4.0000e-005 | 1.0000e-005 | 4.0000e-005 | 0.0000 | 0.5134 | 0.5134 | 2.0000e-005 | 0.0000 | 0.5139 |
| Worker | 1.6000e-004 | 1.3000e-004 | 1.2300e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2742 | 0.2742 | 1.0000e-005 | 0.0000 | 0.2744 |
| **Total** | **2.4000e-004** | **2.7400e-003** | **1.9000e-003** | **1.0000e-005** | **4.7000e-004** | **1.0000e-005** | **4.8000e-004** | **1.2000e-004** | **1.0000e-005** | **1.4000e-004** | **0.0000** | **0.8644** | **0.8644** | **3.0000e-005** | **0.0000** | **0.8652** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.9600e-003 | 0.0514 | 0.0703 | 1.1000e-004 | | 2.7600e-003 | 2.7600e-003 | | 2.6600e-003 | 2.6600e-003 | 0.0000 | 9.8294 | 9.8294 | 1.6900e-003 | 0.0000 | 9.8715 |
| **Total** | **5.9600e-003** | **0.0514** | **0.0703** | **1.1000e-004** | | **2.7600e-003** | **2.7600e-003** | | **2.6600e-003** | **2.6600e-003** | **0.0000** | **9.8294** | **9.8294** | **1.6900e-003** | **0.0000** | **9.8715** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.9000e-004 | 7.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0768 | 0.0768 | 0.0000 | 0.0000 | 0.0769 |
| Vendor | 7.0000e-005 | 2.3200e-003 | 6.0000e-004 | 1.0000e-005 | 1.3000e-004 | 1.0000e-005 | 1.4000e-004 | 4.0000e-005 | 1.0000e-005 | 4.0000e-005 | 0.0000 | 0.5134 | 0.5134 | 2.0000e-005 | 0.0000 | 0.5139 |
| Worker | 1.6000e-004 | 1.3000e-004 | 1.2300e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2742 | 0.2742 | 1.0000e-005 | 0.0000 | 0.2744 |
| **Total** | **2.4000e-004** | **2.7400e-003** | **1.9000e-003** | **1.0000e-005** | **4.7000e-004** | **1.0000e-005** | **4.8000e-004** | **1.2000e-004** | **1.0000e-005** | **1.4000e-004** | **0.0000** | **0.8644** | **0.8644** | **3.0000e-005** | **0.0000** | **0.8652** |

# 3.4 Filters - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 4.7300e-003 | 0.0456 | 0.0433 | 8.0000e-005 | | 2.2800e-003 | 2.2800e-003 | | 2.1800e-003 | 2.1800e-003 | 0.0000 | 7.1474 | 7.1474 | 1.1400e-003 | 0.0000 | 7.1759 |
| **Total** | **4.7300e-003** | **0.0456** | **0.0433** | **8.0000e-005** | | **2.2800e-003** | **2.2800e-003** | | **2.1800e-003** | **2.1800e-003** | **0.0000** | **7.1474** | **7.1474** | **1.1400e-003** | **0.0000** | **7.1759** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 5.0000e-005 | 1.7400e-003 | 4.5000e-004 | 0.0000 | 1.0000e-004 | 1.0000e-005 | 1.0000e-004 | 3.0000e-005 | 1.0000e-005 | 3.0000e-005 | 0.0000 | 0.3851 | 0.3851 | 1.0000e-005 | 0.0000 | 0.3854 |
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **2.9000e-004** | **1.9400e-003** | **2.2900e-003** | **0.0000** | **5.7000e-004** | **1.0000e-005** | **5.8000e-004** | **1.6000e-004** | **1.0000e-005** | **1.6000e-004** | **0.0000** | **0.7963** | **0.7963** | **3.0000e-005** | **0.0000** | **0.7971** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.7300e-003 | 0.0456 | 0.0433 | 8.0000e-005 | | 2.2800e-003 | 2.2800e-003 | | 2.1800e-003 | 2.1800e-003 | 0.0000 | 7.1473 | 7.1473 | 1.1400e-003 | 0.0000 | 7.1759 |
| **Total** | **4.7300e-003** | **0.0456** | **0.0433** | **8.0000e-005** | | **2.2800e-003** | **2.2800e-003** | | **2.1800e-003** | **2.1800e-003** | **0.0000** | **7.1473** | **7.1473** | **1.1400e-003** | **0.0000** | **7.1759** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 5.0000e-005 | 1.7400e-003 | 4.5000e-004 | 0.0000 | 1.0000e-004 | 1.0000e-005 | 1.0000e-004 | 3.0000e-005 | 1.0000e-005 | 3.0000e-005 | 0.0000 | 0.3851 | 0.3851 | 1.0000e-005 | 0.0000 | 0.3854 |
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **2.9000e-004** | **1.9400e-003** | **2.2900e-003** | **0.0000** | **5.7000e-004** | **1.0000e-005** | **5.8000e-004** | **1.6000e-004** | **1.0000e-005** | **1.6000e-004** | **0.0000** | **0.7963** | **0.7963** | **3.0000e-005** | **0.0000** | **0.7971** |

## 3.5 Wellhead piping - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5800e-003 | 0.0152 | 0.0144 | 3.0000e-005 | | 7.6000e-004 | 7.6000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.3825 | 2.3825 | 3.8000e-004 | 0.0000 | 2.3920 |
| **Total** | **1.5800e-003** | **0.0152** | **0.0144** | **3.0000e-005** | | **7.6000e-004** | **7.6000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.3825** | **2.3825** | **3.8000e-004** | **0.0000** | **2.3920** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5800e-003 | 0.0152 | 0.0144 | 3.0000e-005 | | 7.6000e-004 | 7.6000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.3825 | 2.3825 | 3.8000e-004 | 0.0000 | 2.3920 |
| **Total** | **1.5800e-003** | **0.0152** | **0.0144** | **3.0000e-005** | | **7.6000e-004** | **7.6000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.3825** | **2.3825** | **3.8000e-004** | **0.0000** | **2.3920** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## 3.6 Building equipment upgrades - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5800e-003 | 0.0152 | 0.0144 | 3.0000e-005 | | 7.6000e-004 | 7.6000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.3825 | 2.3825 | 3.8000e-004 | 0.0000 | 2.3920 |
| **Total** | **1.5800e-003** | **0.0152** | **0.0144** | **3.0000e-005** | | **7.6000e-004** | **7.6000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.3825** | **2.3825** | **3.8000e-004** | **0.0000** | **2.3920** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 5.9000e-004 | 1.4000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1536 | 0.1536 | 1.0000e-005 | 0.0000 | 0.1537 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.1000e-004** | **1.2400e-003** | **9.0000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **2.3000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.4190** | **0.4190** | **2.0000e-005** | **0.0000** | **0.4194** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.5800e-003 | 0.0152 | 0.0144 | 3.0000e-005 | | 7.6000e-004 | 7.6000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.3825 | 2.3825 | 3.8000e-004 | 0.0000 | 2.3920 |
| **Total** | **1.5800e-003** | **0.0152** | **0.0144** | **3.0000e-005** | | **7.6000e-004** | **7.6000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.3825** | **2.3825** | **3.8000e-004** | **0.0000** | **2.3920** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 5.9000e-004 | 1.4000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1536 | 0.1536 | 1.0000e-005 | 0.0000 | 0.1537 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.1000e-004** | **1.2400e-003** | **9.0000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **2.3000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.4190** | **0.4190** | **2.0000e-005** | **0.0000** | **0.4194** |

## 3.7 Facility startup and testing - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5700e-003 | 0.0163 | 0.0164 | 3.0000e-005 | | 8.4000e-004 | 8.4000e-004 | | 7.8000e-004 | 7.8000e-004 | 0.0000 | 2.3358 | 2.3358 | 7.6000e-004 | 0.0000 | 2.3547 |
| **Total** | **1.5700e-003** | **0.0163** | **0.0164** | **3.0000e-005** | | **8.4000e-004** | **8.4000e-004** | | **7.8000e-004** | **7.8000e-004** | **0.0000** | **2.3358** | **2.3358** | **7.6000e-004** | **0.0000** | **2.3547** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **8.0000e-005** | **6.3000e-004** | **6.1000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2312** | **0.2312** | **0.0000** | **0.0000** | **0.2314** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.5700e-003 | 0.0163 | 0.0164 | 3.0000e-005 | | 8.4000e-004 | 8.4000e-004 | | 7.8000e-004 | 7.8000e-004 | 0.0000 | 2.3358 | 2.3358 | 7.6000e-004 | 0.0000 | 2.3547 |
| **Total** | **1.5700e-003** | **0.0163** | **0.0164** | **3.0000e-005** | | **8.4000e-004** | **8.4000e-004** | | **7.8000e-004** | **7.8000e-004** | **0.0000** | **2.3358** | **2.3358** | **7.6000e-004** | **0.0000** | **2.3547** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **8.0000e-005** | **6.3000e-004** | **6.1000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2312** | **0.2312** | **0.0000** | **0.0000** | **0.2314** |

## 3.8 Final paving and demobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.2500e-003 | 0.0231 | 0.0254 | 4.0000e-005 | | 1.1900e-003 | 1.1900e-003 | | 1.1000e-003 | 1.1000e-003 | 0.0000 | 3.5722 | 3.5722 | 1.1600e-003 | 0.0000 | 3.6011 |
| **Total** | **2.2500e-003** | **0.0231** | **0.0254** | **4.0000e-005** | | **1.1900e-003** | **1.1900e-003** | | **1.1000e-003** | **1.1000e-003** | **0.0000** | **3.5722** | **3.5722** | **1.1600e-003** | **0.0000** | **3.6011** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **8.0000e-005** | **6.3000e-004** | **6.1000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2312** | **0.2312** | **0.0000** | **0.0000** | **0.2314** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.2500e-003 | 0.0231 | 0.0254 | 4.0000e-005 | | 1.1900e-003 | 1.1900e-003 | | 1.1000e-003 | 1.1000e-003 | 0.0000 | 3.5722 | 3.5722 | 1.1600e-003 | 0.0000 | 3.6011 |
| **Total** | **2.2500e-003** | **0.0231** | **0.0254** | **4.0000e-005** | | **1.1900e-003** | **1.1900e-003** | | **1.1000e-003** | **1.1000e-003** | **0.0000** | **3.5722** | **3.5722** | **1.1600e-003** | **0.0000** | **3.6011** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **8.0000e-005** | **6.3000e-004** | **6.1000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2312** | **0.2312** | **0.0000** | **0.0000** | **0.2314** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |
| Other Asphalt Surfaces | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| Unmitigated | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 2.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 2.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0000e-005 | 1.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 |
| **Total** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **0.0000** | **1.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | Mgal | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 12 Construction
**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.33 | 1000sqft | 0.01 | 326.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 12 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 11 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 11/22/2022 | 8/19/2022 |
| tblConstructionPhase | PhaseEndDate | 4/11/2023 | 9/2/2022 |
| tblConstructionPhase | PhaseEndDate | 8/29/2023 | 9/9/2022 |
| tblConstructionPhase | PhaseEndDate | 7/5/2022 | 7/11/2022 |
| tblConstructionPhase | PhaseStartDate | 7/6/2022 | 8/15/2022 |
| tblConstructionPhase | PhaseStartDate | 11/23/2022 | 8/29/2022 |
| tblConstructionPhase | PhaseStartDate | 4/12/2023 | 9/5/2022 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 11.00 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.20 | 0.20 |
| tblOffRoadEquipment | LoadFactor | 0.37 | 0.37 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.36 | 0.36 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 1.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 1.9037 | 17.1521 | 20.5207 | 0.0367 | 0.1754 | 0.8591 | 1.0345 | 0.0474 | 0.8267 | 0.8741 | 0.0000 | 3,532.6010 | 3,532.6010 | 0.8225 | 0.0000 | 3,546.3838 |
| **Maximum** | **1.9037** | **17.1521** | **20.5207** | **0.0367** | **0.1754** | **0.8591** | **1.0345** | **0.0474** | **0.8267** | **0.8741** | **0.0000** | **3,532.6010** | **3,532.6010** | **0.8225** | **0.0000** | **3,546.3838** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | 1.9037 | 17.1521 | 20.5207 | 0.0367 | 0.1754 | 0.8591 | 1.0345 | 0.0474 | 0.8267 | 0.8741 | 0.0000 | 3,532.6010 | 3,532.6010 | 0.8225 | 0.0000 | 3,546.3838 |
| **Maximum** | **1.9037** | **17.1521** | **20.5207** | **0.0367** | **0.1754** | **0.8591** | **1.0345** | **0.0474** | **0.8267** | **0.8741** | **0.0000** | **3,532.6010** | **3,532.6010** | **0.8225** | **0.0000** | **3,546.3838** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | **0.0000** | **8.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | **0.0000** | **8.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 7/5/2022 | 7/11/2022 | 5 | 5 | |
| 2 | Injection line and conduit | Trenching | 7/12/2022 | 7/25/2022 | 5 | 10 | |
| 3 | Filters | Building Construction | 7/25/2022 | 8/12/2022 | 5 | 15 | |
| 4 | Wellhead piping | Building Construction | 8/15/2022 | 8/19/2022 | 5 | 5 | |
| 5 | Building equipment upgrades | Building Construction | 8/22/2022 | 8/26/2022 | 5 | 5 | |
| 6 | Facility startup and testing | Building Construction | 8/29/2022 | 9/2/2022 | 5 | 5 | |
| 7 | Final paving and demobilization | Building Construction | 9/5/2022 | 9/9/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Filters | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Building equipment upgrades | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Filters | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Building equipment upgrades | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Filters | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Building equipment upgrades | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Injection line and conduit | Concrete/Industrial Saws | | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Filters | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Building equipment upgrades | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Pavers | | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | | 1 | 4.00 | 80 | 0.38 |
| Facility startup and testing | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Filters | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building equipment upgrades | 3 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3100e-003 | 0.0000 | 2.3100e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **2.3100e-003** | **0.2573** | **0.2596** | **2.6000e-004** | **0.2367** | **0.2370** | | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0400e-003 | 0.0000 | 1.0400e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | 0.0000 | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **1.0400e-003** | **0.2573** | **0.2584** | **1.2000e-004** | **0.2367** | **0.2369** | **0.0000** | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.3 Injection line and conduit - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1913 | 10.2849 | 14.0563 | 0.0227 | | 0.5522 | 0.5522 | | 0.5325 | 0.5325 | | 2,167.0033 | 2,167.0033 | 0.3718 | | 2,176.2981 |
| **Total** | **1.1913** | **10.2849** | **14.0563** | **0.0227** | | **0.5522** | **0.5522** | | **0.5325** | **0.5325** | | **2,167.0033** | **2,167.0033** | **0.3718** | | **2,176.2981** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.4200e-003 | 0.0575 | 0.0132 | 1.6000e-004 | 3.4600e-003 | 2.2000e-004 | 3.6800e-003 | 9.5000e-004 | 2.1000e-004 | 1.1500e-003 | | 17.0264 | 17.0264 | 6.8000e-004 | | 17.0433 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0451** | **0.5394** | **0.3790** | **1.8800e-003** | **0.0962** | **2.1100e-003** | **0.0983** | **0.0261** | **2.0000e-003** | **0.0281** | | **194.6247** | **194.6247** | **7.2400e-003** | | **194.8057** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.1913 | 10.2849 | 14.0563 | 0.0227 | | 0.5522 | 0.5522 | | 0.5325 | 0.5325 | 0.0000 | 2,167.0033 | 2,167.0033 | 0.3718 | | 2,176.2981 |
| **Total** | **1.1913** | **10.2849** | **14.0563** | **0.0227** | | **0.5522** | **0.5522** | | **0.5325** | **0.5325** | **0.0000** | **2,167.0033** | **2,167.0033** | **0.3718** | | **2,176.2981** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.4200e-003 | 0.0575 | 0.0132 | 1.6000e-004 | 3.4600e-003 | 2.2000e-004 | 3.6800e-003 | 9.5000e-004 | 2.1000e-004 | 1.1500e-003 | | 17.0264 | 17.0264 | 6.8000e-004 | | 17.0433 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0451** | **0.5394** | **0.3790** | **1.8800e-003** | **0.0962** | **2.1100e-003** | **0.0983** | **0.0261** | **2.0000e-003** | **0.0281** | | **194.6247** | **194.6247** | **7.2400e-003** | | **194.8057** |

## 3.4 Filters - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.5 Wellhead piping - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.6 Building equipment upgrades - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.6700e-003 | 0.2300 | 0.0529 | 6.4000e-004 | 0.0139 | 8.7000e-004 | 0.0147 | 3.7900e-003 | 8.3000e-004 | 4.6200e-003 | | 68.1057 | 68.1057 | 2.7100e-003 | | 68.1733 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0430** | **0.4826** | **0.3624** | **1.8200e-003** | **0.0931** | **2.0700e-003** | **0.0951** | **0.0251** | **1.9600e-003** | **0.0271** | | **188.5981** | **188.5981** | **7.1400e-003** | | **188.7766** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.6700e-003 | 0.2300 | 0.0529 | 6.4000e-004 | 0.0139 | 8.7000e-004 | 0.0147 | 3.7900e-003 | 8.3000e-004 | 4.6200e-003 | | 68.1057 | 68.1057 | 2.7100e-003 | | 68.1733 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0430** | **0.4826** | **0.3624** | **1.8200e-003** | **0.0931** | **2.0700e-003** | **0.0951** | **0.0251** | **1.9600e-003** | **0.0271** | | **188.5981** | **188.5981** | **7.1400e-003** | | **188.7766** |

## 3.7 Facility startup and testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0296** | **0.2468** | **0.2462** | **1.0200e-003** | **0.0628** | **1.0700e-003** | **0.0639** | **0.0170** | **1.0100e-003** | **0.0180** | | **104.6458** | **104.6458** | **3.8600e-003** | | **104.7422** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | 0.0000 | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | **0.0000** | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |

| Total | 0.0296 | 0.2468 | 0.2462 | 1.0200e-003 | 0.0628 | 1.0700e-003 | 0.0639 | 0.0170 | 1.0100e-003 | 0.0180 | | 104.6458 | 104.6458 | 3.8600e-003 | | 104.7422 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

### 3.8 Final paving and demobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9018 | 9.2453 | 10.1761 | 0.0163 | | 0.4772 | 0.4772 | | 0.4390 | 0.4390 | | 1,575.0565 | 1,575.0565 | 0.5094 | | 1,587.7916 |
| **Total** | **0.9018** | **9.2453** | **10.1761** | **0.0163** | | **0.4772** | **0.4772** | | **0.4390** | **0.4390** | | **1,575.0565** | **1,575.0565** | **0.5094** | | **1,587.7916** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0296** | **0.2468** | **0.2462** | **1.0200e-003** | **0.0628** | **1.0700e-003** | **0.0639** | **0.0170** | **1.0100e-003** | **0.0180** | | **104.6458** | **104.6458** | **3.8600e-003** | | **104.7422** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9018 | 9.2453 | 10.1761 | 0.0163 | | 0.4772 | 0.4772 | | 0.4390 | 0.4390 | 0.0000 | 1,575.0565 | 1,575.0565 | 0.5094 | | 1,587.7916 |
| **Total** | **0.9018** | **9.2453** | **10.1761** | **0.0163** | | **0.4772** | **0.4772** | | **0.4390** | **0.4390** | **0.0000** | **1,575.0565** | **1,575.0565** | **0.5094** | | **1,587.7916** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0296** | **0.2468** | **0.2462** | **1.0200e-003** | **0.0628** | **1.0700e-003** | **0.0639** | **0.0170** | **1.0100e-003** | **0.0180** | | **104.6458** | **104.6458** | **3.8600e-003** | | **104.7422** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |
| Other Asphalt Surfaces | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| Unmitigated | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | | **8.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | | **8.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Beltz 12 Construction

## Santa Cruz County, Winter

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 0.33 | 1000sqft | 0.01 | 326.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Beltz 12 Construction

Land Use - Surrogate land uses for pipeline and pavement

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 11 CY of material assumed to be exported and 0.01 acres total assumed to be disturbed

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 11/22/2022 | 8/19/2022 |
| tblConstructionPhase | PhaseEndDate | 4/11/2023 | 9/2/2022 |
| tblConstructionPhase | PhaseEndDate | 8/29/2023 | 9/9/2022 |
| tblConstructionPhase | PhaseEndDate | 7/5/2022 | 7/11/2022 |
| tblConstructionPhase | PhaseStartDate | 7/6/2022 | 8/15/2022 |
| tblConstructionPhase | PhaseStartDate | 11/23/2022 | 8/29/2022 |
| tblConstructionPhase | PhaseStartDate | 4/12/2023 | 9/5/2022 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 11.00 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.20 | 0.20 |
| tblOffRoadEquipment | LoadFactor | 0.37 | 0.37 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.36 | 0.36 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 1.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 1.9126 | 17.1696 | 20.5493 | 0.0366 | 0.1754 | 0.8592 | 1.0346 | 0.0474 | 0.8268 | 0.8743 | 0.0000 | 3,522.7322 | 3,522.7322 | 0.8227 | 0.0000 | 3,536.5230 |
| **Maximum** | **1.9126** | **17.1696** | **20.5493** | **0.0366** | **0.1754** | **0.8592** | **1.0346** | **0.0474** | **0.8268** | **0.8743** | **0.0000** | **3,522.7322** | **3,522.7322** | **0.8227** | **0.0000** | **3,536.5230** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2022 | 1.9126 | 17.1696 | 20.5493 | 0.0366 | 0.1754 | 0.8592 | 1.0346 | 0.0474 | 0.8268 | 0.8743 | 0.0000 | 3,522.7322 | 3,522.7322 | 0.8227 | 0.0000 | 3,536.5230 |
| **Maximum** | **1.9126** | **17.1696** | **20.5493** | **0.0366** | **0.1754** | **0.8592** | **1.0346** | **0.0474** | **0.8268** | **0.8743** | **0.0000** | **3,522.7322** | **3,522.7322** | **0.8227** | **0.0000** | **3,536.5230** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | **0.0000** | **8.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | **0.0000** | **8.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 7/5/2022 | 7/11/2022 | 5 | 5 | |
| 2 | Injection line and conduit | Trenching | 7/12/2022 | 7/25/2022 | 5 | 10 | |
| 3 | Filters | Building Construction | 7/25/2022 | 8/12/2022 | 5 | 15 | |
| 4 | Wellhead piping | Building Construction | 8/15/2022 | 8/19/2022 | 5 | 5 | |
| 5 | Building equipment upgrades | Building Construction | 8/22/2022 | 8/26/2022 | 5 | 5 | |
| 6 | Facility startup and testing | Building Construction | 8/29/2022 | 9/2/2022 | 5 | 5 | |
| 7 | Final paving and demobilization | Building Construction | 9/5/2022 | 9/9/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.01**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Filters | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Building equipment upgrades | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Filters | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Building equipment upgrades | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Filters | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Building equipment upgrades | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Injection line and conduit | Concrete/Industrial Saws | | 1 | 8.00 | 81 | 0.73 |
| Injection line and conduit | Excavators | | 1 | 8.00 | 158 | 0.38 |
| Injection line and conduit | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Injection line and conduit | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Injection line and conduit | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Filters | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Wellhead piping | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Building equipment upgrades | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Wellhead piping | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Final paving and demobilization | Pavers | | 1 | 4.00 | 130 | 0.42 |
| Final paving and demobilization | Paving Equipment | | 1 | 4.00 | 132 | 0.36 |
| Final paving and demobilization | Rollers | | 1 | 4.00 | 80 | 0.38 |
| Facility startup and testing | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Facility startup and testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Final paving and demobilization | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Final paving and demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Final paving and demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobilization | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Filters | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building equipment upgrades | 3 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Injection line and conduit | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead piping | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Final paving and demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3100e-003 | 0.0000 | 2.3100e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **2.3100e-003** | **0.2573** | **0.2596** | **2.6000e-004** | **0.2367** | **0.2370** | | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0400e-003 | 0.0000 | 1.0400e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5797 | 6.9332 | 3.9597 | 9.7300e-003 | | 0.2573 | 0.2573 | | 0.2367 | 0.2367 | 0.0000 | 942.5179 | 942.5179 | 0.3048 | | 950.1386 |
| **Total** | **0.5797** | **6.9332** | **3.9597** | **9.7300e-003** | **1.0400e-003** | **0.2573** | **0.2584** | **1.2000e-004** | **0.2367** | **0.2369** | **0.0000** | **942.5179** | **942.5179** | **0.3048** | | **950.1386** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

# 3.3 Injection line and conduit - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1913 | 10.2849 | 14.0563 | 0.0227 | | 0.5522 | 0.5522 | | 0.5325 | 0.5325 | | 2,167.0033 | 2,167.0033 | 0.3718 | | 2,176.2981 |
| **Total** | **1.1913** | **10.2849** | **14.0563** | **0.0227** | | **0.5522** | **0.5522** | | **0.5325** | **0.5325** | | **2,167.0033** | **2,167.0033** | **0.3718** | | **2,176.2981** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.4600e-003 | 0.0586 | 0.0140 | 1.6000e-004 | 3.4600e-003 | 2.2000e-004 | 3.6900e-003 | 9.5000e-004 | 2.1000e-004 | 1.1600e-003 | | 16.7936 | 16.7936 | 7.0000e-004 | | 16.8112 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0497** | **0.5495** | **0.3975** | **1.8200e-003** | **0.0962** | **2.1800e-003** | **0.0983** | **0.0261** | **2.0600e-003** | **0.0282** | | **188.9653** | **188.9653** | **7.4900e-003** | | **189.1524** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.1913 | 10.2849 | 14.0563 | 0.0227 | | 0.5522 | 0.5522 | | 0.5325 | 0.5325 | 0.0000 | 2,167.0033 | 2,167.0033 | 0.3718 | | 2,176.2981 |
| **Total** | **1.1913** | **10.2849** | **14.0563** | **0.0227** | | **0.5522** | **0.5522** | | **0.5325** | **0.5325** | **0.0000** | **2,167.0033** | **2,167.0033** | **0.3718** | | **2,176.2981** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.4600e-003 | 0.0586 | 0.0140 | 1.6000e-004 | 3.4600e-003 | 2.2000e-004 | 3.6900e-003 | 9.5000e-004 | 2.1000e-004 | 1.1600e-003 | | 16.7936 | 16.7936 | 7.0000e-004 | | 16.8112 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0497** | **0.5495** | **0.3975** | **1.8200e-003** | **0.0962** | **2.1800e-003** | **0.0983** | **0.0261** | **2.0600e-003** | **0.0282** | | **188.9653** | **188.9653** | **7.4900e-003** | | **189.1524** |

## 3.4 Filters - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## 3.5 Wellhead piping - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## 3.6 Building equipment upgrades - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.8300e-003 | 0.2344 | 0.0558 | 6.3000e-004 | 0.0139 | 8.9000e-004 | 0.0148 | 3.7900e-003 | 8.5000e-004 | 4.6400e-003 | | 67.1746 | 67.1746 | 2.8000e-003 | | 67.2446 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0473** | **0.4944** | **0.3755** | **1.7700e-003** | **0.0931** | **2.1300e-003** | **0.0952** | **0.0251** | **2.0200e-003** | **0.0271** | | **183.4577** | **183.4577** | **7.3100e-003** | | **183.6405** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6301 | 6.0753 | 5.7759 | 0.0110 | | 0.3037 | 0.3037 | | 0.2911 | 0.2911 | 0.0000 | 1,050.4806 | 1,050.4806 | 0.1679 | | 1,054.6767 |
| **Total** | **0.6301** | **6.0753** | **5.7759** | **0.0110** | | **0.3037** | **0.3037** | | **0.2911** | **0.2911** | **0.0000** | **1,050.4806** | **1,050.4806** | **0.1679** | | **1,054.6767** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.8300e-003 | 0.2344 | 0.0558 | 6.3000e-004 | 0.0139 | 8.9000e-004 | 0.0148 | 3.7900e-003 | 8.5000e-004 | 4.6400e-003 | | 67.1746 | 67.1746 | 2.8000e-003 | | 67.2446 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0473** | **0.4944** | **0.3755** | **1.7700e-003** | **0.0931** | **2.1300e-003** | **0.0952** | **0.0251** | **2.0200e-003** | **0.0271** | | **183.4577** | **183.4577** | **7.3100e-003** | | **183.6405** |

## 3.7 Facility startup and testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0328** | **0.2527** | **0.2557** | **9.9000e-004** | **0.0628** | **1.1100e-003** | **0.0639** | **0.0170** | **1.0500e-003** | **0.0180** | | **101.1845** | **101.1845** | **3.9500e-003** | | **101.2832** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6295 | 6.4983 | 6.5758 | 0.0106 | | 0.3370 | 0.3370 | | 0.3100 | 0.3100 | 0.0000 | 1,029.9239 | 1,029.9239 | 0.3331 | | 1,038.2514 |
| **Total** | **0.6295** | **6.4983** | **6.5758** | **0.0106** | | **0.3370** | **0.3370** | | **0.3100** | **0.3100** | **0.0000** | **1,029.9239** | **1,029.9239** | **0.3331** | | **1,038.2514** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0328** | **0.2527** | **0.2557** | **9.9000e-004** | **0.0628** | **1.1100e-003** | **0.0639** | **0.0170** | **1.0500e-003** | **0.0180** | | **101.1845** | **101.1845** | **3.9500e-003** | | **101.2832** |

### 3.8 Final paving and demobilization - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9018 | 9.2453 | 10.1761 | 0.0163 | | 0.4772 | 0.4772 | | 0.4390 | 0.4390 | | 1,575.0565 | 1,575.0565 | 0.5094 | | 1,587.7916 |
| **Total** | **0.9018** | **9.2453** | **10.1761** | **0.0163** | | **0.4772** | **0.4772** | | **0.4390** | **0.4390** | | **1,575.0565** | **1,575.0565** | **0.5094** | | **1,587.7916** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0328** | **0.2527** | **0.2557** | **9.9000e-004** | **0.0628** | **1.1100e-003** | **0.0639** | **0.0170** | **1.0500e-003** | **0.0180** | | **101.1845** | **101.1845** | **3.9500e-003** | | **101.2832** |

**Mitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9018 | 9.2453 | 10.1761 | 0.0163 | | 0.4772 | 0.4772 | | 0.4390 | 0.4390 | 0.0000 | 1,575.0565 | 1,575.0565 | 0.5094 | | 1,587.7916 |
| **Total** | **0.9018** | **9.2453** | **10.1761** | **0.0163** | | **0.4772** | **0.4772** | | **0.4390** | **0.4390** | **0.0000** | **1,575.0565** | **1,575.0565** | **0.5094** | | **1,587.7916** |

**Mitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0328** | **0.2527** | **0.2557** | **9.9000e-004** | **0.0628** | **1.1100e-003** | **0.0639** | **0.0170** | **1.0500e-003** | **0.0180** | | **101.1845** | **101.1845** | **3.9500e-003** | | **101.2832** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |
| Other Asphalt Surfaces | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| Unmitigated | 1.6000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | | **8.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 4.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | | 8.0000e-005 |
| **Total** | **1.6000e-004** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **7.0000e-005** | **7.0000e-005** | **0.0000** | | **8.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Monitoring Well Construction

**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Monitoring Well

Land Use - Surrogate land use for monitoring well

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 12 CY of material export assumed for a monitoring well

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

Solid Waste - Modeling construction only

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 0.00 | 30.00 |
| tblConstructionPhase | NumDays | 0.00 | 10.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Site prep and conductor casings install |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2024 | 0.0424 | 0.3832 | 0.5003 | 1.1500e-003 | 1.9100e-003 | 0.0164 | 0.0183 | 5.1000e-004 | 0.0156 | 0.0161 | 0.0000 | 100.4891 | 100.4891 | 0.0234 | 0.0000 | 101.0734 |
| **Maximum** | **0.0424** | **0.3832** | **0.5003** | **1.1500e-003** | **1.9100e-003** | **0.0164** | **0.0183** | **5.1000e-004** | **0.0156** | **0.0161** | **0.0000** | **100.4891** | **100.4891** | **0.0234** | **0.0000** | **101.0734** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2024 | 0.0424 | 0.3832 | 0.5003 | 1.1500e-003 | 1.9100e-003 | 0.0164 | 0.0183 | 5.1000e-004 | 0.0156 | 0.0161 | 0.0000 | 100.4889 | 100.4889 | 0.0234 | 0.0000 | 101.0733 |
| **Maximum** | **0.0424** | **0.3832** | **0.5003** | **1.1500e-003** | **1.9100e-003** | **0.0164** | **0.0183** | **5.1000e-004** | **0.0156** | **0.0161** | **0.0000** | **100.4889** | **100.4889** | **0.0234** | **0.0000** | **101.0733** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.06** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| **Quarter** | **Start Date** | **End Date** | **Maximum Unmitigated ROG + NOX (tons/quarter)** | **Maximum Mitigated ROG + NOX (tons/quarter)** |
|---|---|---|---|---|
| **17** | **6-1-2024** | **8-31-2024** | 0.3804 | 0.3804 |

| | | | | |
|---|---|---|---|---|
| **18** | **9-1-2024** | **9-30-2024** | 0.0113 | 0.0113 |
| | | **Highest** | 0.3804 | 0.3804 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casings install | Site Preparation | 7/1/2024 | 7/5/2024 | 5 | 5 | |
| 2 | Well drilling and construction | Building Construction | 7/8/2024 | 8/16/2024 | 5 | 30 | |
| 3 | Monitoring well development | Building Construction | 8/19/2024 | 8/30/2024 | 5 | 10 | |
| 4 | Well equipment demobil and cleanup | Building Construction | 9/2/2024 | 9/6/2024 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site prep and conductor casings install | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Site prep and conductor casings install | Graders | 1 | 8.00 | 187 | 0.41 |
| Site prep and conductor casings install | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Well drilling and construction | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well drilling and construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well drilling and construction | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Well drilling and construction | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well drilling and construction | Tractors/Loaders/Backhoes | 1 | 24.00 | 97 | 0.37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Monitoring well development | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Monitoring well development | Bore/Drill Rigs | | 1 | 8.00 | 221 | 0.50 |
| Monitoring well development | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Monitoring well development | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Monitoring well development | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Monitoring well development | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well equipment demobil and cleanup | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Well equipment demobil and cleanup | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Well equipment demobil and cleanup | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site prep and conductor casings | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well drilling and construction | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Monitoring well development | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well equipment demobil and cleanup | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casings install - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.1300e-003 | 0.0224 | 0.0204 | 6.0000e-005 | | 8.3000e-004 | 8.3000e-004 | | 7.6000e-004 | 7.6000e-004 | 0.0000 | 4.9020 | 4.9020 | 1.5900e-003 | 0.0000 | 4.9416 |

| Total | 2.1300e-003 | 0.0224 | 0.0204 | 6.0000e-005 | 1.0000e-005 | 8.3000e-004 | 8.4000e-004 | 0.0000 | 7.6000e-004 | 7.6000e-004 | 0.0000 | 4.9020 | 4.9020 | 1.5900e-003 | 0.0000 | 4.9416 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **8.0000e-005** | **5.2000e-004** | **6.4000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2525** | **0.2525** | **0.0000** | **0.0000** | **0.2527** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.1300e-003 | 0.0224 | 0.0204 | 6.0000e-005 | | 8.3000e-004 | 8.3000e-004 | | 7.6000e-004 | 7.6000e-004 | 0.0000 | 4.9020 | 4.9020 | 1.5900e-003 | 0.0000 | 4.9416 |
| **Total** | **2.1300e-003** | **0.0224** | **0.0204** | **6.0000e-005** | **0.0000** | **8.3000e-004** | **8.3000e-004** | **0.0000** | **7.6000e-004** | **7.6000e-004** | **0.0000** | **4.9020** | **4.9020** | **1.5900e-003** | **0.0000** | **4.9416** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **8.0000e-005** | **5.2000e-004** | **6.4000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2525** | **0.2525** | **0.0000** | **0.0000** | **0.2527** |

## 3.3 Well drilling and construction - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0340 | 0.3065 | 0.4110 | 9.3000e-004 | | 0.0134 | 0.0134 | | 0.0127 | 0.0127 | 0.0000 | 81.2464 | 81.2464 | 0.0192 | 0.0000 | 81.7256 |
| **Total** | **0.0340** | **0.3065** | **0.4110** | **9.3000e-004** | | **0.0134** | **0.0134** | | **0.0127** | **0.0127** | **0.0000** | **81.2464** | **81.2464** | **0.0192** | **0.0000** | **81.7256** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 7.0000e-005 | 2.8300e-003 | 7.6000e-004 | 1.0000e-005 | 2.0000e-004 | 1.0000e-005 | 2.0000e-004 | 6.0000e-005 | 1.0000e-005 | 6.0000e-005 | 0.0000 | 0.7526 | 0.7526 | 3.0000e-005 | 0.0000 | 0.7532 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 4.1000e-004 | 3.2000e-004 | 3.0900e-003 | 1.0000e-005 | 9.5000e-004 | 1.0000e-005 | 9.6000e-004 | 2.5000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.7623 | 0.7623 | 2.0000e-005 | 0.0000 | 0.7629 |
| **Total** | **4.9000e-004** | **3.3700e-003** | **3.9100e-003** | **2.0000e-005** | **1.1700e-003** | **2.0000e-005** | **1.1800e-003** | **3.1000e-004** | **2.0000e-005** | **3.3000e-004** | **0.0000** | **1.5892** | **1.5892** | **5.0000e-005** | **0.0000** | **1.5906** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0340 | 0.3065 | 0.4110 | 9.3000e-004 | | 0.0134 | 0.0134 | | 0.0127 | 0.0127 | 0.0000 | 81.2463 | 81.2463 | 0.0192 | 0.0000 | 81.7255 |
| **Total** | **0.0340** | **0.3065** | **0.4110** | **9.3000e-004** | | **0.0134** | **0.0134** | | **0.0127** | **0.0127** | **0.0000** | **81.2463** | **81.2463** | **0.0192** | **0.0000** | **81.7255** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 7.0000e-005 | 2.8300e-003 | 7.6000e-004 | 1.0000e-005 | 2.0000e-004 | 1.0000e-005 | 2.0000e-004 | 6.0000e-005 | 1.0000e-005 | 6.0000e-005 | 0.0000 | 0.7526 | 0.7526 | 3.0000e-005 | 0.0000 | 0.7532 |
| Worker | 4.1000e-004 | 3.2000e-004 | 3.0900e-003 | 1.0000e-005 | 9.5000e-004 | 1.0000e-005 | 9.6000e-004 | 2.5000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.7623 | 0.7623 | 2.0000e-005 | 0.0000 | 0.7629 |
| **Total** | **4.9000e-004** | **3.3700e-003** | **3.9100e-003** | **2.0000e-005** | **1.1700e-003** | **2.0000e-005** | **1.1800e-003** | **3.1000e-004** | **2.0000e-005** | **3.3000e-004** | **0.0000** | **1.5892** | **1.5892** | **5.0000e-005** | **0.0000** | **1.5906** |

## 3.4 Monitoring well development - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.1500e-003 | 0.0348 | 0.0463 | 1.1000e-004 | | 1.5300e-003 | 1.5300e-003 | | 1.4800e-003 | 1.4800e-003 | 0.0000 | 9.3608 | 9.3608 | 1.7700e-003 | 0.0000 | 9.4051 |
| **Total** | **4.1500e-003** | **0.0348** | **0.0463** | **1.1000e-004** | | **1.5300e-003** | **1.5300e-003** | | **1.4800e-003** | **1.4800e-003** | **0.0000** | **9.3608** | **9.3608** | **1.7700e-003** | **0.0000** | **9.4051** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 2.0000e-005 | 9.4000e-004 | 2.5000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2509 | 0.2509 | 1.0000e-005 | 0.0000 | 0.2511 |
| Worker | 1.4000e-004 | 1.1000e-004 | 1.0300e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2541 | 0.2541 | 1.0000e-005 | 0.0000 | 0.2543 |
| **Total** | **1.7000e-004** | **1.2700e-003** | **1.3400e-003** | **0.0000** | **4.1000e-004** | **0.0000** | **4.1000e-004** | **1.0000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **0.5793** | **0.5793** | **2.0000e-005** | **0.0000** | **0.5798** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.1500e-003 | 0.0348 | 0.0463 | 1.1000e-004 | | 1.5300e-003 | 1.5300e-003 | | 1.4800e-003 | 1.4800e-003 | 0.0000 | 9.3607 | 9.3607 | 1.7700e-003 | 0.0000 | 9.4051 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **4.1500e-003** | **0.0348** | **0.0463** | **1.1000e-004** | | **1.5300e-003** | **1.5300e-003** | | **1.4800e-003** | **1.4800e-003** | **0.0000** | **9.3607** | **9.3607** | **1.7700e-003** | **0.0000** | **9.4051** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 2.0000e-005 | 9.4000e-004 | 2.5000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2509 | 0.2509 | 1.0000e-005 | 0.0000 | 0.2511 |
| Worker | 1.4000e-004 | 1.1000e-004 | 1.0300e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2541 | 0.2541 | 1.0000e-005 | 0.0000 | 0.2543 |
| **Total** | **1.7000e-004** | **1.2700e-003** | **1.3400e-003** | **0.0000** | **4.1000e-004** | **0.0000** | **4.1000e-004** | **1.0000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **0.5793** | **0.5793** | **2.0000e-005** | **0.0000** | **0.5798** |

## 3.5 Well equipment demobil and cleanup - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3700e-003 | 0.0138 | 0.0162 | 3.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.3382 | 2.3382 | 7.6000e-004 | 0.0000 | 2.3571 |
| **Total** | **1.3700e-003** | **0.0138** | **0.0162** | **3.0000e-005** | | **6.4000e-004** | **6.4000e-004** | | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.3382** | **2.3382** | **7.6000e-004** | **0.0000** | **2.3571** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
| **Total** | **6.0000e-005** | **5.1000e-004** | **5.2000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2207** | **0.2207** | **0.0000** | **0.0000** | **0.2209** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3700e-003 | 0.0138 | 0.0162 | 3.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.3382 | 2.3382 | 7.6000e-004 | 0.0000 | 2.3571 |
| **Total** | **1.3700e-003** | **0.0138** | **0.0162** | **3.0000e-005** | | **6.4000e-004** | **6.4000e-004** | | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.3382** | **2.3382** | **7.6000e-004** | **0.0000** | **2.3571** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
| **Total** | **6.0000e-005** | **5.1000e-004** | **5.2000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2207** | **0.2207** | **0.0000** | **0.0000** | **0.2209** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.586012 | 0.026671 | 0.206176 | 0.113932 | 0.017728 | 0.004552 | 0.021301 | 0.012716 | 0.001229 | 0.002351 | 0.005430 | 0.000986 | 0.000914 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | kWh/yr | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 3.9000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**<u>Mitigated</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 3.9000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Monitoring Well Construction
## Santa Cruz County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Monitoring Well

Land Use - Surrogate land use for monitoring well

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 12 CY of material export assumed for a monitoring well

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

Solid Waste - Modeling construction only

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 0.00 | 30.00 |
| tblConstructionPhase | NumDays | 0.00 | 10.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Site prep and conductor casings install |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.2958 | 20.6542 | 27.6641 | 0.0633 | 0.0827 | 0.8932 | 0.9736 | 0.0223 | 0.8499 | 0.8715 | 0.0000 | 6,090.6377 | 6,090.6377 | 1.4127 | 0.0000 | 6,125.9551 |
| **Maximum** | **2.2958** | **20.6542** | **27.6641** | **0.0633** | **0.0827** | **0.8932** | **0.9736** | **0.0223** | **0.8499** | **0.8715** | **0.0000** | **6,090.6377** | **6,090.6377** | **1.4127** | **0.0000** | **6,125.9551** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.2958 | 20.6542 | 27.6641 | 0.0633 | 0.0827 | 0.8932 | 0.9736 | 0.0223 | 0.8499 | 0.8715 | 0.0000 | 6,090.6377 | 6,090.6377 | 1.4127 | 0.0000 | 6,125.9551 |
| **Maximum** | **2.2958** | **20.6542** | **27.6641** | **0.0633** | **0.0827** | **0.8932** | **0.9736** | **0.0223** | **0.8499** | **0.8715** | **0.0000** | **6,090.6377** | **6,090.6377** | **1.4127** | **0.0000** | **6,125.9551** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

### 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casings install | Site Preparation | 7/1/2024 | 7/5/2024 | 5 | 5 | |
| 2 | Well drilling and construction | Building Construction | 7/8/2024 | 8/16/2024 | 5 | 30 | |
| 3 | Monitoring well development | Building Construction | 8/19/2024 | 8/30/2024 | 5 | 10 | |
| 4 | Well equipment demobil and cleanup | Building Construction | 9/2/2024 | 9/6/2024 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site prep and conductor casings install | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Site prep and conductor casings install | Graders | 1 | 8.00 | 187 | 0.41 |
| Site prep and conductor casings install | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Well drilling and construction | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well drilling and construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well drilling and construction | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Well drilling and construction | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well drilling and construction | Tractors/Loaders/Backhoes | 1 | 24.00 | 97 | 0.37 |
| Monitoring well development | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Monitoring well development | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Monitoring well development | Cranes | 0 | 0.00 | 231 | 0.29 |
| Monitoring well development | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Monitoring well development | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Monitoring well development | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Well equipment demobil and cleanup | Cranes | 1 | 4.00 | 231 | 0.29 |
| Well equipment demobil and cleanup | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Well equipment demobil and cleanup | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site prep and conductor casings | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well drilling and construction | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Monitoring well development | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well equipment demobil and cleanup | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casings install - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3300e-003 | 0.0000 | 2.3300e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8530 | 8.9532 | 8.1660 | 0.0223 | | 0.3303 | 0.3303 | | 0.3039 | 0.3039 | | 2,161.4043 | 2,161.4043 | 0.6990 | | 2,178.8803 |
| **Total** | **0.8530** | **8.9532** | **8.1660** | **0.0223** | **2.3300e-003** | **0.3303** | **0.3327** | **2.6000e-004** | **0.3039** | **0.3042** | | **2,161.4043** | **2,161.4043** | **0.6990** | | **2,178.8803** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0500e-003 | 0.0000 | 1.0500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8530 | 8.9532 | 8.1660 | 0.0223 | | 0.3303 | 0.3303 | | 0.3039 | 0.3039 | 0.0000 | 2,161.4043 | 2,161.4043 | 0.6990 | | 2,178.8803 |
| **Total** | **0.8530** | **8.9532** | **8.1660** | **0.0223** | **1.0500e-003** | **0.3303** | **0.3314** | **1.2000e-004** | **0.3039** | **0.3040** | **0.0000** | **2,161.4043** | **2,161.4043** | **0.6990** | | **2,178.8803** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

### 3.3 Well drilling and construction - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2635 | 20.4339 | 27.3992 | 0.0621 | | 0.8923 | 0.8923 | | 0.8491 | 0.8491 | | 5,970.5864 | 5,970.5864 | 1.4087 | | 6,005.8046 |
| **Total** | **2.2635** | **20.4339** | **27.3992** | **0.0621** | | **0.8923** | **0.8923** | | **0.8491** | **0.8491** | | **5,970.5864** | **5,970.5864** | **1.4087** | | **6,005.8046** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.6000e-004 | 0.0143 | 4.0100e-003 | 5.0000e-005 | 1.1600e-003 | 4.0000e-005 | 1.2000e-003 | 3.2000e-004 | 4.0000e-005 | 3.5000e-004 | | 5.4996 | 5.4996 | 2.1000e-004 | | 5.5050 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0322** | **0.2204** | **0.2649** | **1.1700e-003** | **0.0804** | **8.8000e-004** | **0.0813** | **0.0216** | **8.3000e-004** | **0.0225** | | **120.0513** | **120.0513** | **3.9700e-003** | | **120.1506** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 2.2635 | 20.4339 | 27.3992 | 0.0621 | | 0.8923 | 0.8923 | | 0.8491 | 0.8491 | 0.0000 | 5,970.5864 | 5,970.5864 | 1.4087 | | 6,005.8046 |
| **Total** | **2.2635** | **20.4339** | **27.3992** | **0.0621** | | **0.8923** | **0.8923** | | **0.8491** | **0.8491** | **0.0000** | **5,970.5864** | **5,970.5864** | **1.4087** | | **6,005.8046** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.6000e-004 | 0.0143 | 4.0100e-003 | 5.0000e-005 | 1.1600e-003 | 4.0000e-005 | 1.2000e-003 | 3.2000e-004 | 4.0000e-005 | 3.5000e-004 | | 5.4996 | 5.4996 | 2.1000e-004 | | 5.5050 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0322** | **0.2204** | **0.2649** | **1.1700e-003** | **0.0804** | **8.8000e-004** | **0.0813** | **0.0216** | **8.3000e-004** | **0.0225** | | **120.0513** | **120.0513** | **3.9700e-003** | | **120.1506** |

## 3.4 Monitoring well development - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8308 | 6.9541 | 9.2551 | 0.0216 | | 0.3056 | 0.3056 | | 0.2965 | 0.2965 | | 2,063.6928 | 2,063.6928 | 0.3909 | | 2,073.4657 |
| **Total** | **0.8308** | **6.9541** | **9.2551** | **0.0216** | | **0.3056** | **0.3056** | | **0.2965** | **0.2965** | | **2,063.6928** | **2,063.6928** | **0.3909** | | **2,073.4657** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.0700e-003 | 0.0429 | 0.0120 | 1.5000e-004 | 3.4700e-003 | 1.2000e-004 | 3.5900e-003 | 9.5000e-004 | 1.2000e-004 | 1.0600e-003 | | 16.4988 | 16.4988 | 6.4000e-004 | | 16.5149 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0329** | **0.2489** | **0.2729** | **1.2700e-003** | **0.0827** | **9.6000e-004** | **0.0836** | **0.0223** | **9.1000e-004** | **0.0232** | | **131.0504** | **131.0504** | **4.4000e-003** | | **131.1605** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8308 | 6.9541 | 9.2551 | 0.0216 | | 0.3056 | 0.3056 | | 0.2965 | 0.2965 | 0.0000 | 2,063.6928 | 2,063.6928 | 0.3909 | | 2,073.4657 |
| **Total** | **0.8308** | **6.9541** | **9.2551** | **0.0216** | | **0.3056** | **0.3056** | | **0.2965** | **0.2965** | **0.0000** | **2,063.6928** | **2,063.6928** | **0.3909** | | **2,073.4657** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 1.0700e-003 | 0.0429 | 0.0120 | 1.5000e-004 | 3.4700e-003 | 1.2000e-004 | 3.5900e-003 | 9.5000e-004 | 1.2000e-004 | 1.0600e-003 | | 16.4988 | 16.4988 | 6.4000e-004 | | 16.5149 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0329** | **0.2489** | **0.2729** | **1.2700e-003** | **0.0827** | **9.6000e-004** | **0.0836** | **0.0223** | **9.1000e-004** | **0.0232** | | **131.0504** | **131.0504** | **4.4000e-003** | | **131.1605** |

### 3.5 Well equipment demobil and cleanup - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0251** | **0.2014** | **0.2075** | **9.7000e-004** | **0.0628** | **7.2000e-004** | **0.0635** | **0.0170** | **6.8000e-004** | **0.0176** | | **99.8664** | **99.8664** | **3.3000e-003** | | **99.9488** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | 0.0000 | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | **0.0000** | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |
| **Total** | **0.0251** | **0.2014** | **0.2075** | **9.7000e-004** | **0.0628** | **7.2000e-004** | **0.0635** | **0.0170** | **6.8000e-004** | **0.0176** | | **99.8664** | **99.8664** | **3.3000e-003** | | **99.9488** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| Land Use | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| Land Use | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.586012 | 0.026671 | 0.206176 | 0.113932 | 0.017728 | 0.004552 | 0.021301 | 0.012716 | 0.001229 | 0.002351 | 0.005430 | 0.000986 | 0.000914 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Unmitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Monitoring Well Construction

**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Monitoring Well

Land Use - Surrogate land use for monitoring well

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - 12 CY of material export assumed for a monitoring well

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

Solid Waste - Modeling construction only

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 0.00 | 30.00 |
| tblConstructionPhase | NumDays | 0.00 | 10.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 1.00 |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Site prep and conductor casings install |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Monitoring well development |
| tblOffRoadEquipment | PhaseName | | Well drilling and construction |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 2.00 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.2995 | 20.6599 | 27.6712 | 0.0632 | 0.0827 | 0.8932 | 0.9736 | 0.0223 | 0.8499 | 0.8716 | 0.0000 | 6,086.5850 | 6,086.5850 | 1.4128 | 0.0000 | 6,121.9040 |
| **Maximum** | **2.2995** | **20.6599** | **27.6712** | **0.0632** | **0.0827** | **0.8932** | **0.9736** | **0.0223** | **0.8499** | **0.8716** | **0.0000** | **6,086.5850** | **6,086.5850** | **1.4128** | **0.0000** | **6,121.9040** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.2995 | 20.6599 | 27.6712 | 0.0632 | 0.0827 | 0.8932 | 0.9736 | 0.0223 | 0.8499 | 0.8716 | 0.0000 | 6,086.5850 | 6,086.5850 | 1.4128 | 0.0000 | 6,121.9040 |
| **Maximum** | **2.2995** | **20.6599** | **27.6712** | **0.0632** | **0.0827** | **0.8932** | **0.9736** | **0.0223** | **0.8499** | **0.8716** | **0.0000** | **6,086.5850** | **6,086.5850** | **1.4128** | **0.0000** | **6,121.9040** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casings install | Site Preparation | 7/1/2024 | 7/5/2024 | 5 | 5 | |
| 2 | Well drilling and construction | Building Construction | 7/8/2024 | 8/16/2024 | 5 | 30 | |
| 3 | Monitoring well development | Building Construction | 8/19/2024 | 8/30/2024 | 5 | 10 | |
| 4 | Well equipment demobil and cleanup | Building Construction | 9/2/2024 | 9/6/2024 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site prep and conductor casings install | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Site prep and conductor casings install | Graders | 1 | 8.00 | 187 | 0.41 |
| Site prep and conductor casings install | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Well drilling and construction | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well drilling and construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well drilling and construction | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Well drilling and construction | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well drilling and construction | Tractors/Loaders/Backhoes | 1 | 24.00 | 97 | 0.37 |
| Monitoring well development | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Monitoring well development | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Monitoring well development | Cranes | 0 | 0.00 | 231 | 0.29 |
| Monitoring well development | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Monitoring well development | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Monitoring well development | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Well equipment demobil and cleanup | Cranes | 1 | 4.00 | 231 | 0.29 |
| Well equipment demobil and cleanup | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Well equipment demobil and cleanup | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site prep and conductor casings | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well drilling and construction | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Monitoring well development | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well equipment demobil and cleanup | 4 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casings install - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3300e-003 | 0.0000 | 2.3300e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8530 | 8.9532 | 8.1660 | 0.0223 | | 0.3303 | 0.3303 | | 0.3039 | 0.3039 | | 2,161.4043 | 2,161.4043 | 0.6990 | | 2,178.8803 |
| **Total** | **0.8530** | **8.9532** | **8.1660** | **0.0223** | **2.3300e-003** | **0.3303** | **0.3327** | **2.6000e-004** | **0.3039** | **0.3042** | | **2,161.4043** | **2,161.4043** | **0.6990** | | **2,178.8803** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 1.0500e-003 | 0.0000 | 1.0500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8530 | 8.9532 | 8.1660 | 0.0223 | | 0.3303 | 0.3303 | | 0.3039 | 0.3039 | 0.0000 | 2,161.4043 | 2,161.4043 | 0.6990 | | 2,178.8803 |
| **Total** | **0.8530** | **8.9532** | **8.1660** | **0.0223** | **1.0500e-003** | **0.3303** | **0.3314** | **1.2000e-004** | **0.3039** | **0.3040** | **0.0000** | **2,161.4043** | **2,161.4043** | **0.6990** | | **2,178.8803** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

### 3.3 Well drilling and construction - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2635 | 20.4339 | 27.3992 | 0.0621 | | 0.8923 | 0.8923 | | 0.8491 | 0.8491 | | 5,970.5864 | 5,970.5864 | 1.4087 | | 6,005.8046 |
| **Total** | **2.2635** | **20.4339** | **27.3992** | **0.0621** | | **0.8923** | **0.8923** | | **0.8491** | **0.8491** | | **5,970.5864** | **5,970.5864** | **1.4087** | | **6,005.8046** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.7000e-004 | 0.0145 | 4.2000e-003 | 5.0000e-005 | 1.1600e-003 | 4.0000e-005 | 1.2000e-003 | 3.2000e-004 | 4.0000e-005 | 3.6000e-004 | | 5.4229 | 5.4229 | 2.2000e-004 | | 5.4285 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0360** | **0.2260** | **0.2720** | **1.1200e-003** | **0.0804** | **9.0000e-004** | **0.0813** | **0.0216** | **8.5000e-004** | **0.0225** | | **115.9986** | **115.9986** | **4.0300e-003** | | **116.0994** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 2.2635 | 20.4339 | 27.3992 | 0.0621 | | 0.8923 | 0.8923 | | 0.8491 | 0.8491 | 0.0000 | 5,970.5864 | 5,970.5864 | 1.4087 | | 6,005.8046 |
| **Total** | **2.2635** | **20.4339** | **27.3992** | **0.0621** | | **0.8923** | **0.8923** | | **0.8491** | **0.8491** | **0.0000** | **5,970.5864** | **5,970.5864** | **1.4087** | | **6,005.8046** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.7000e-004 | 0.0145 | 4.2000e-003 | 5.0000e-005 | 1.1600e-003 | 4.0000e-005 | 1.2000e-003 | 3.2000e-004 | 4.0000e-005 | 3.6000e-004 | | 5.4229 | 5.4229 | 2.2000e-004 | | 5.4285 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0360** | **0.2260** | **0.2720** | **1.1200e-003** | **0.0804** | **9.0000e-004** | **0.0813** | **0.0216** | **8.5000e-004** | **0.0225** | | **115.9986** | **115.9986** | **4.0300e-003** | | **116.0994** |

## 3.4 Monitoring well development - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8308 | 6.9541 | 9.2551 | 0.0216 | | 0.3056 | 0.3056 | | 0.2965 | 0.2965 | | 2,063.6928 | 2,063.6928 | 0.3909 | | 2,073.4657 |
| **Total** | **0.8308** | **6.9541** | **9.2551** | **0.0216** | | **0.3056** | **0.3056** | | **0.2965** | **0.2965** | | **2,063.6928** | **2,063.6928** | **0.3909** | | **2,073.4657** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1000e-003 | 0.0435 | 0.0126 | 1.5000e-004 | 3.4700e-003 | 1.3000e-004 | 3.5900e-003 | 9.5000e-004 | 1.2000e-004 | 1.0700e-003 | | 16.2688 | 16.2688 | 6.6000e-004 | | 16.2854 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0367** | **0.2550** | **0.2804** | **1.2200e-003** | **0.0827** | **9.9000e-004** | **0.0837** | **0.0223** | **9.3000e-004** | **0.0232** | | **126.8444** | **126.8444** | **4.4700e-003** | | **126.9564** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8308 | 6.9541 | 9.2551 | 0.0216 | | 0.3056 | 0.3056 | | 0.2965 | 0.2965 | 0.0000 | 2,063.6928 | 2,063.6928 | 0.3909 | | 2,073.4657 |
| **Total** | **0.8308** | **6.9541** | **9.2551** | **0.0216** | | **0.3056** | **0.3056** | | **0.2965** | **0.2965** | **0.0000** | **2,063.6928** | **2,063.6928** | **0.3909** | | **2,073.4657** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.1000e-003 | 0.0435 | 0.0126 | 1.5000e-004 | 3.4700e-003 | 1.3000e-004 | 3.5900e-003 | 9.5000e-004 | 1.2000e-004 | 1.0700e-003 | | 16.2688 | 16.2688 | 6.6000e-004 | | 16.2854 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0367** | **0.2550** | **0.2804** | **1.2200e-003** | **0.0827** | **9.9000e-004** | **0.0837** | **0.0223** | **9.3000e-004** | **0.0232** | | **126.8444** | **126.8444** | **4.4700e-003** | | **126.9564** |

### 3.5 Well equipment demobil and cleanup - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |

| Total | 0.0280 | 0.2056 | 0.2143 | 9.3000e-004 | 0.0628 | 7.4000e-004 | 0.0635 | 0.0170 | 7.0000e-004 | 0.0177 | | 96.5834 | 96.5834 | 3.3700e-003 | | 96.6676 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | 0.0000 | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | **0.0000** | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |
| **Total** | **0.0280** | **0.2056** | **0.2143** | **9.3000e-004** | **0.0628** | **7.4000e-004** | **0.0635** | **0.0170** | **7.0000e-004** | **0.0177** | | **96.5834** | **96.5834** | **3.3700e-003** | | **96.6676** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.586012 | 0.026671 | 0.206176 | 0.113932 | 0.017728 | 0.004552 | 0.021301 | 0.012716 | 0.001229 | 0.002351 | 0.005430 | 0.000986 | 0.000914 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Unmitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - ASR Well Construction
## Santa Cruz County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - ASR Well Construction

Land Use - Surrogate land use for ASR water supply well

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - 12 CY of material export assumed for a ASR well

Trips and VMT - Construction vehicle information based on City input

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 3.00 |
| tblConstructionPhase | NumDays | 0.00 | 3.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 9/15/2024 | 9/27/2024 |
| tblConstructionPhase | PhaseEndDate | 9/15/2024 | 9/20/2024 |
| tblConstructionPhase | PhaseStartDate | 9/16/2024 | 9/23/2024 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | LoadFactor | 0.40 | 0.40 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2024 | 0.0312 | 0.2853 | 0.3532 | 7.9000e-004 | 1.7900e-003 | 0.0123 | 0.0141 | 4.8000e-004 | 0.0117 | 0.0122 | 0.0000 | 68.9570 | 68.9570 | 0.0153 | 0.0000 | 69.3393 |
| **Maximum** | **0.0312** | **0.2853** | **0.3532** | **7.9000e-004** | **1.7900e-003** | **0.0123** | **0.0141** | **4.8000e-004** | **0.0117** | **0.0122** | **0.0000** | **68.9570** | **68.9570** | **0.0153** | **0.0000** | **69.3393** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2024 | 0.0312 | 0.2853 | 0.3532 | 7.9000e-004 | 1.7900e-003 | 0.0123 | 0.0141 | 4.8000e-004 | 0.0117 | 0.0122 | 0.0000 | 68.9569 | 68.9569 | 0.0153 | 0.0000 | 69.3392 |
| **Maximum** | **0.0312** | **0.2853** | **0.3532** | **7.9000e-004** | **1.7900e-003** | **0.0123** | **0.0141** | **4.8000e-004** | **0.0117** | **0.0122** | **0.0000** | **68.9569** | **68.9569** | **0.0153** | **0.0000** | **69.3392** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **9-16-2024** | **9-30-2024** | 0.0674 | 0.0674 |
| | | **Highest** | 0.0674 | 0.0674 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casing | Site Preparation | 9/16/2024 | 9/20/2024 | 5 | 5 | |
| 2 | Pilot borehole drilling | Building Construction | 9/23/2024 | 9/27/2024 | 5 | 5 | |
| 3 | Ream and caliper survey | Building Construction | 9/30/2024 | 10/4/2024 | 5 | 5 | |
| 4 | Well construction | Building Construction | 10/7/2024 | 10/11/2024 | 5 | 5 | |
| 5 | Well development - air lift and swab pt 1 | Building Construction | 10/14/2024 | 10/18/2024 | 5 | 5 | |
| 6 | Well development - air lift and swab pt 2 | Building Construction | 10/21/2024 | 10/23/2024 | 5 | 3 | |
| 7 | Well development - test pump install | Building Construction | 10/23/2024 | 10/25/2024 | 5 | 3 | |
| 8 | Well development - pumping | Building Construction | 10/28/2024 | 11/1/2024 | 5 | 5 | |
| 9 | Well testing | Building Construction | 11/4/2024 | 11/8/2024 | 5 | 5 | |
| 10 | Test pump removal | Building Construction | 11/11/2024 | 11/15/2024 | 5 | 5 | |
| 11 | Demobilization | Building Construction | 11/18/2024 | 11/22/2024 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Ream and caliper survey | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well development - air lift and swab pt 1 | Cranes | 0 | 0.00 | 231 | 0.29 |
| Site prep and conductor casing | Graders | 1 | 8.00 | 187 | 0.41 |
| Site prep and conductor casing | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Well development - air lift and swab pt 2 | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well development - test pump install | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well development - pumping | Cranes | 0 | 0.00 | 231 | 0.29 |
| Pilot borehole drilling | Cranes | 0 | 0.00 | 231 | 0.29 |
| Pilot borehole drilling | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Pilot borehole drilling | Tractors/Loaders/Backhoes | 1 | 24.00 | 97 | 0.37 |
| Well testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Test pump removal | Cranes | 1 | 4.00 | 231 | 0.29 |
| Demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Ream and caliper survey | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Well construction | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Well development - air lift and swab pt 1 | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Well development - air lift and swab pt 2 | Forklifts | 1 | 24.00 | 89 | 0.20 |
| Well development - test pump install | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Well development - pumping | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Well testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Test pump removal | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Ream and caliper survey | Tractors/Loaders/Backhoes | 1 | 24.00 | 97 | 0.37 |
| Well construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Well development - air lift and swab pt 1 | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Well development - air lift and swab pt 2 | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Well development - test pump install | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

| | | | | | |
|---|---|---|---|---|---|
| Well development - pumping | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Well testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Test pump removal | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing | Bore/Drill Rigs | 1 | 8.00 | 221 | 0.50 |
| Pilot borehole drilling | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Pilot borehole drilling | Pumps | 1 | 24.00 | 84 | 0.74 |
| Ream and caliper survey | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Ream and caliper survey | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well construction | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Well development - air lift and swab pt 1 | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well development - air lift and swab pt 1 | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well development - air lift and swab pt 2 | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well development - air lift and swab pt 2 | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well development - test pump install | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well development - test pump install | Pumps | 1 | 8.00 | 84 | 0.74 |
| Well development - pumping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well development - pumping | Pumps | 1 | 8.00 | 84 | 0.74 |
| Well testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well testing | Pumps | 1 | 8.00 | 84 | 0.74 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Ream and caliper survey | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pilot borehole drilling | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - air lift and swab pt 1 | 3 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - air lift and swab pt 2 | 3 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site prep and conductor casing | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - test pump install | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Well development - pumping | 3 | 8.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well testing | 3 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Test pump removal | 4 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demobilization | 4 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casing - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.1400e-003 | 0.0224 | 0.0204 | 6.0000e-005 | | 8.3000e-004 | 8.3000e-004 | | 7.6000e-004 | 7.6000e-004 | 0.0000 | 4.9124 | 4.9124 | 1.5900e-003 | 0.0000 | 4.9521 |
| **Total** | **2.1400e-003** | **0.0224** | **0.0204** | **6.0000e-005** | **1.0000e-005** | **8.3000e-004** | **8.4000e-004** | **0.0000** | **7.6000e-004** | **7.6000e-004** | **0.0000** | **4.9124** | **4.9124** | **1.5900e-003** | **0.0000** | **4.9521** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **8.0000e-005** | **5.2000e-004** | **6.4000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2525** | **0.2525** | **0.0000** | **0.0000** | **0.2527** |

**<u>Mitigated Construction On-Site</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.1400e-003 | 0.0224 | 0.0204 | 6.0000e-005 | | 8.3000e-004 | 8.3000e-004 | | 7.6000e-004 | 7.6000e-004 | 0.0000 | 4.9124 | 4.9124 | 1.5900e-003 | 0.0000 | 4.9521 |
| **Total** | **2.1400e-003** | **0.0224** | **0.0204** | **6.0000e-005** | **0.0000** | **8.3000e-004** | **8.3000e-004** | **0.0000** | **7.6000e-004** | **7.6000e-004** | **0.0000** | **4.9124** | **4.9124** | **1.5900e-003** | **0.0000** | **4.9521** |

**<u>Mitigated Construction Off-Site</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **8.0000e-005** | **5.2000e-004** | **6.4000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2525** | **0.2525** | **0.0000** | **0.0000** | **0.2527** |

## 3.3 Pilot borehole drilling - 2024

**<u>Unmitigated Construction On-Site</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.6700e-003 | 0.0512 | 0.0686 | 1.6000e-004 | | 2.2300e-003 | 2.2300e-003 | | 2.1200e-003 | 2.1200e-003 | 0.0000 | 13.5723 | 13.5723 | 3.2100e-003 | 0.0000 | 13.6524 |
| **Total** | **5.6700e-003** | **0.0512** | **0.0686** | **1.6000e-004** | | **2.2300e-003** | **2.2300e-003** | | **2.1200e-003** | **2.1200e-003** | **0.0000** | **13.5723** | **13.5723** | **3.2100e-003** | **0.0000** | **13.6524** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **9.0000e-005** | **7.4000e-004** | **7.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.3269** | **0.3269** | **0.0000** | **0.0000** | **0.3272** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.6700e-003 | 0.0512 | 0.0686 | 1.6000e-004 | | 2.2300e-003 | 2.2300e-003 | | 2.1200e-003 | 2.1200e-003 | 0.0000 | 13.5723 | 13.5723 | 3.2100e-003 | 0.0000 | 13.6524 |
| **Total** | **5.6700e-003** | **0.0512** | **0.0686** | **1.6000e-004** | | **2.2300e-003** | **2.2300e-003** | | **2.1200e-003** | **2.1200e-003** | **0.0000** | **13.5723** | **13.5723** | **3.2100e-003** | **0.0000** | **13.6524** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **9.0000e-005** | **7.4000e-004** | **7.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.3269** | **0.3269** | **0.0000** | **0.0000** | **0.3272** |

## 3.4 Ream and caliper survey - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.6700e-003 | 0.0512 | 0.0686 | 1.6000e-004 | | 2.2300e-003 | 2.2300e-003 | | 2.1200e-003 | 2.1200e-003 | 0.0000 | 13.5723 | 13.5723 | 3.2100e-003 | 0.0000 | 13.6524 |
| **Total** | **5.6700e-003** | **0.0512** | **0.0686** | **1.6000e-004** | | **2.2300e-003** | **2.2300e-003** | | **2.1200e-003** | **2.1200e-003** | **0.0000** | **13.5723** | **13.5723** | **3.2100e-003** | **0.0000** | **13.6524** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **9.0000e-005** | **7.4000e-004** | **7.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.3269** | **0.3269** | **0.0000** | **0.0000** | **0.3272** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.6700e-003 | 0.0512 | 0.0686 | 1.6000e-004 | | 2.2300e-003 | 2.2300e-003 | | 2.1200e-003 | 2.1200e-003 | 0.0000 | 13.5723 | 13.5723 | 3.2100e-003 | 0.0000 | 13.6524 |
| **Total** | **5.6700e-003** | **0.0512** | **0.0686** | **1.6000e-004** | | **2.2300e-003** | **2.2300e-003** | | **2.1200e-003** | **2.1200e-003** | **0.0000** | **13.5723** | **13.5723** | **3.2100e-003** | **0.0000** | **13.6524** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **9.0000e-005** | **7.4000e-004** | **7.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.3269** | **0.3269** | **0.0000** | **0.0000** | **0.3272** |

## 3.5 Well construction - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.4400e-003 | 0.0249 | 0.0189 | 4.0000e-005 | | 1.1300e-003 | 1.1300e-003 | | 1.0400e-003 | 1.0400e-003 | 0.0000 | 3.2223 | 3.2223 | 1.0400e-003 | 0.0000 | 3.2484 |
| **Total** | **2.4400e-003** | **0.0249** | **0.0189** | **4.0000e-005** | | **1.1300e-003** | **1.1300e-003** | | **1.0400e-003** | **1.0400e-003** | **0.0000** | **3.2223** | **3.2223** | **1.0400e-003** | **0.0000** | **3.2484** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **8.0000e-005** | **5.2000e-004** | **6.4000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2525** | **0.2525** | **0.0000** | **0.0000** | **0.2527** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.4400e-003 | 0.0249 | 0.0189 | 4.0000e-005 | | 1.1300e-003 | 1.1300e-003 | | 1.0400e-003 | 1.0400e-003 | 0.0000 | 3.2223 | 3.2223 | 1.0400e-003 | 0.0000 | 3.2484 |
| **Total** | **2.4400e-003** | **0.0249** | **0.0189** | **4.0000e-005** | | **1.1300e-003** | **1.1300e-003** | | **1.0400e-003** | **1.0400e-003** | **0.0000** | **3.2223** | **3.2223** | **1.0400e-003** | **0.0000** | **3.2484** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **8.0000e-005** | **5.2000e-004** | **6.4000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2525** | **0.2525** | **0.0000** | **0.0000** | **0.2527** |

## 3.6 Well development - air lift and swab pt 1 - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.5900e-003 | 0.0403 | 0.0518 | 1.3000e-004 | | 1.7300e-003 | 1.7300e-003 | | 1.6700e-003 | 1.6700e-003 | 0.0000 | 11.5191 | 11.5191 | 2.5400e-003 | 0.0000 | 11.5826 |

| Total | 4.5900e-003 | 0.0403 | 0.0518 | 1.3000e-004 | | 1.7300e-003 | 1.7300e-003 | | 1.6700e-003 | 1.6700e-003 | 0.0000 | 11.5191 | 11.5191 | 2.5400e-003 | 0.0000 | 11.5826 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 4.4000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1488 | 0.1488 | 1.0000e-005 | 0.0000 | 0.1490 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **9.0000e-005** | **9.6000e-004** | **7.6000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **2.2000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.4013** | **0.4013** | **1.0000e-005** | **0.0000** | **0.4016** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.5900e-003 | 0.0403 | 0.0518 | 1.3000e-004 | | 1.7300e-003 | 1.7300e-003 | | 1.6700e-003 | 1.6700e-003 | 0.0000 | 11.5191 | 11.5191 | 2.5400e-003 | 0.0000 | 11.5826 |
| **Total** | **4.5900e-003** | **0.0403** | **0.0518** | **1.3000e-004** | | **1.7300e-003** | **1.7300e-003** | | **1.6700e-003** | **1.6700e-003** | **0.0000** | **11.5191** | **11.5191** | **2.5400e-003** | **0.0000** | **11.5826** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 4.4000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1488 | 0.1488 | 1.0000e-005 | 0.0000 | 0.1490 |
| Vendor | 1.0000e-005 | 4.7000e-004 | 1.3000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1254 | 0.1254 | 0.0000 | 0.0000 | 0.1255 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **9.0000e-005** | **9.6000e-004** | **7.6000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **2.2000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.4013** | **0.4013** | **1.0000e-005** | **0.0000** | **0.4016** |

## 3.7 Well development - air lift and swab pt 2 - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.7500e-003 | 0.0242 | 0.0311 | 8.0000e-005 | | 1.0400e-003 | 1.0400e-003 | | 1.0000e-003 | 1.0000e-003 | 0.0000 | 6.9115 | 6.9115 | 1.5200e-003 | 0.0000 | 6.9496 |
| **Total** | **2.7500e-003** | **0.0242** | **0.0311** | **8.0000e-005** | | **1.0400e-003** | **1.0400e-003** | | **1.0000e-003** | **1.0000e-003** | **0.0000** | **6.9115** | **6.9115** | **1.5200e-003** | **0.0000** | **6.9496** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0753 | 0.0753 | 0.0000 | 0.0000 | 0.0753 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0762 | 0.0762 | 0.0000 | 0.0000 | 0.0763 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **4.5000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **1.4000e-004** | **4.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2259** | **0.2259** | **0.0000** | **0.0000** | **0.2261** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.7500e-003 | 0.0242 | 0.0311 | 8.0000e-005 | | 1.0400e-003 | 1.0400e-003 | | 1.0000e-003 | 1.0000e-003 | 0.0000 | 6.9114 | 6.9114 | 1.5200e-003 | 0.0000 | 6.9496 |
| **Total** | **2.7500e-003** | **0.0242** | **0.0311** | **8.0000e-005** | | **1.0400e-003** | **1.0400e-003** | | **1.0000e-003** | **1.0000e-003** | **0.0000** | **6.9114** | **6.9114** | **1.5200e-003** | **0.0000** | **6.9496** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 2.2000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0744 | 0.0744 | 0.0000 | 0.0000 | 0.0745 |
| Vendor | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0753 | 0.0753 | 0.0000 | 0.0000 | 0.0753 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0762 | 0.0762 | 0.0000 | 0.0000 | 0.0763 |
| **Total** | **6.0000e-005** | **5.3000e-004** | **4.5000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **1.4000e-004** | **4.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2259** | **0.2259** | **0.0000** | **0.0000** | **0.2261** |

## 3.8 Well development - test pump install - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.0300e-003 | 9.0100e-003 | 0.0128 | 2.0000e-005 | | 4.2000e-004 | 4.2000e-004 | | 4.1000e-004 | 4.1000e-004 | 0.0000 | 1.8971 | 1.8971 | 1.4000e-004 | 0.0000 | 1.9005 |
| **Total** | **1.0300e-003** | **9.0100e-003** | **0.0128** | **2.0000e-005** | | **4.2000e-004** | **4.2000e-004** | | **4.1000e-004** | **4.1000e-004** | **0.0000** | **1.8971** | **1.8971** | **1.4000e-004** | **0.0000** | **1.9005** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0753 | 0.0753 | 0.0000 | 0.0000 | 0.0753 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0762 | 0.0762 | 0.0000 | 0.0000 | 0.0763 |
| **Total** | **5.0000e-005** | **3.1000e-004** | **3.9000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.2000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1515** | **0.1515** | **0.0000** | **0.0000** | **0.1516** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.0300e-003 | 9.0100e-003 | 0.0128 | 2.0000e-005 | | 4.2000e-004 | 4.2000e-004 | | 4.1000e-004 | 4.1000e-004 | 0.0000 | 1.8971 | 1.8971 | 1.4000e-004 | 0.0000 | 1.9005 |
| **Total** | **1.0300e-003** | **9.0100e-003** | **0.0128** | **2.0000e-005** | | **4.2000e-004** | **4.2000e-004** | | **4.1000e-004** | **4.1000e-004** | **0.0000** | **1.8971** | **1.8971** | **1.4000e-004** | **0.0000** | **1.9005** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0753 | 0.0753 | 0.0000 | 0.0000 | 0.0753 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0762 | 0.0762 | 0.0000 | 0.0000 | 0.0763 |
| **Total** | **5.0000e-005** | **3.1000e-004** | **3.9000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.2000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1515** | **0.1515** | **0.0000** | **0.0000** | **0.1516** |

## 3.9 Well development - pumping - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.7100e-003 | 0.0150 | 0.0213 | 4.0000e-005 | | 7.0000e-004 | 7.0000e-004 | | 6.9000e-004 | 6.9000e-004 | 0.0000 | 3.1618 | 3.1618 | 2.3000e-004 | 0.0000 | 3.1675 |
| **Total** | **1.7100e-003** | **0.0150** | **0.0213** | **4.0000e-005** | | **7.0000e-004** | **7.0000e-004** | | **6.9000e-004** | **6.9000e-004** | **0.0000** | **3.1618** | **3.1618** | **2.3000e-004** | **0.0000** | **3.1675** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **7.0000e-005** | **5.0000e-005** | **5.1000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1270** | **0.1270** | **0.0000** | **0.0000** | **0.1271** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.7100e-003 | 0.0150 | 0.0213 | 4.0000e-005 | | 7.0000e-004 | 7.0000e-004 | | 6.9000e-004 | 6.9000e-004 | 0.0000 | 3.1618 | 3.1618 | 2.3000e-004 | 0.0000 | 3.1675 |
| **Total** | **1.7100e-003** | **0.0150** | **0.0213** | **4.0000e-005** | | **7.0000e-004** | **7.0000e-004** | | **6.9000e-004** | **6.9000e-004** | **0.0000** | **3.1618** | **3.1618** | **2.3000e-004** | **0.0000** | **3.1675** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1270 | 0.1270 | 0.0000 | 0.0000 | 0.1271 |
| **Total** | **7.0000e-005** | **5.0000e-005** | **5.1000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1270** | **0.1270** | **0.0000** | **0.0000** | **0.1271** |

## 3.10 Well testing - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.7100e-003 | 0.0150 | 0.0213 | 4.0000e-005 | | 7.0000e-004 | 7.0000e-004 | | 6.9000e-004 | 6.9000e-004 | 0.0000 | 3.1618 | 3.1618 | 2.3000e-004 | 0.0000 | 3.1675 |
| **Total** | **1.7100e-003** | **0.0150** | **0.0213** | **4.0000e-005** | | **7.0000e-004** | **7.0000e-004** | | **6.9000e-004** | **6.9000e-004** | **0.0000** | **3.1618** | **3.1618** | **2.3000e-004** | **0.0000** | **3.1675** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
| **Total** | **5.0000e-005** | **4.0000e-005** | **3.9000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0953** | **0.0953** | **0.0000** | **0.0000** | **0.0954** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.7100e-003 | 0.0150 | 0.0213 | 4.0000e-005 | | 7.0000e-004 | 7.0000e-004 | | 6.9000e-004 | 6.9000e-004 | 0.0000 | 3.1618 | 3.1618 | 2.3000e-004 | 0.0000 | 3.1675 |
| **Total** | **1.7100e-003** | **0.0150** | **0.0213** | **4.0000e-005** | | **7.0000e-004** | **7.0000e-004** | | **6.9000e-004** | **6.9000e-004** | **0.0000** | **3.1618** | **3.1618** | **2.3000e-004** | **0.0000** | **3.1675** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
| **Total** | **5.0000e-005** | **4.0000e-005** | **3.9000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0953** | **0.0953** | **0.0000** | **0.0000** | **0.0954** |

## 3.11 Test pump removal - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.3700e-003 | 0.0138 | 0.0162 | 3.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.3382 | 2.3382 | 7.6000e-004 | 0.0000 | 2.3571 |
| **Total** | **1.3700e-003** | **0.0138** | **0.0162** | **3.0000e-005** | | **6.4000e-004** | **6.4000e-004** | | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.3382** | **2.3382** | **7.6000e-004** | **0.0000** | **2.3571** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
| **Total** | **5.0000e-005** | **4.0000e-005** | **3.9000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0953** | **0.0953** | **0.0000** | **0.0000** | **0.0954** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3700e-003 | 0.0138 | 0.0162 | 3.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.3382 | 2.3382 | 7.6000e-004 | 0.0000 | 2.3571 |
| **Total** | **1.3700e-003** | **0.0138** | **0.0162** | **3.0000e-005** | | **6.4000e-004** | **6.4000e-004** | | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.3382** | **2.3382** | **7.6000e-004** | **0.0000** | **2.3571** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
| **Total** | **5.0000e-005** | **4.0000e-005** | **3.9000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0953** | **0.0953** | **0.0000** | **0.0000** | **0.0954** |

## 3.12 Demobilization - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3700e-003 | 0.0138 | 0.0162 | 3.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.3382 | 2.3382 | 7.6000e-004 | 0.0000 | 2.3571 |
| **Total** | **1.3700e-003** | **0.0138** | **0.0162** | **3.0000e-005** | | **6.4000e-004** | **6.4000e-004** | | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.3382** | **2.3382** | **7.6000e-004** | **0.0000** | **2.3571** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
| **Total** | **5.0000e-005** | **4.0000e-005** | **3.9000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0953** | **0.0953** | **0.0000** | **0.0000** | **0.0954** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3700e-003 | 0.0138 | 0.0162 | 3.0000e-005 | | 6.4000e-004 | 6.4000e-004 | | 5.9000e-004 | 5.9000e-004 | 0.0000 | 2.3382 | 2.3382 | 7.6000e-004 | 0.0000 | 2.3571 |
| **Total** | **1.3700e-003** | **0.0138** | **0.0162** | **3.0000e-005** | | **6.4000e-004** | **6.4000e-004** | | **5.9000e-004** | **5.9000e-004** | **0.0000** | **2.3382** | **2.3382** | **7.6000e-004** | **0.0000** | **2.3571** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |

| Total | 5.0000e-005 | 4.0000e-005 | 3.9000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0953 | 0.0953 | 0.0000 | 0.0000 | 0.0954 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.586012 | 0.026671 | 0.206176 | 0.113932 | 0.017728 | 0.004552 | 0.021301 | 0.012716 | 0.001229 | 0.002351 | 0.005430 | 0.000986 | 0.000914 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 3.9000e-004 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 3.9000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 3.9000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.9000e-004** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|

| | MT/yr | | | |
|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - ASR Well Construction
## Santa Cruz County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2025 |

**Utility Company** Pacific Gas & Electric Company

| | | | | | |
|---|---|---|---|---|---|
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - ASR Well Construction

Land Use - Surrogate land use for ASR water supply well

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - 12 CY of material export assumed for a ASR well

Trips and VMT - Construction vehicle information based on City input

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 3.00 |
| tblConstructionPhase | NumDays | 0.00 | 3.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 9/15/2024 | 9/27/2024 |
| tblConstructionPhase | PhaseEndDate | 9/15/2024 | 9/20/2024 |
| tblConstructionPhase | PhaseStartDate | 9/16/2024 | 9/23/2024 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | LoadFactor | 0.40 | 0.40 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.5873 | 22.6793 | 29.8078 | 0.0703 | 0.1700 | 0.9750 | 1.1450 | 0.0458 | 0.9435 | 0.9892 | 0.0000 | 6,757.2459 | 6,757.2459 | 1.4182 | 0.0000 | 6,788.0095 |
| **Maximum** | **2.5873** | **22.6793** | **29.8078** | **0.0703** | **0.1700** | **0.9750** | **1.1450** | **0.0458** | **0.9435** | **0.9892** | **0.0000** | **6,757.2459** | **6,757.2459** | **1.4182** | **0.0000** | **6,788.0095** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.5873 | 22.6793 | 29.8078 | 0.0703 | 0.1700 | 0.9750 | 1.1450 | 0.0458 | 0.9435 | 0.9892 | 0.0000 | 6,757.2459 | 6,757.2459 | 1.4182 | 0.0000 | 6,788.0095 |
| **Maximum** | **2.5873** | **22.6793** | **29.8078** | **0.0703** | **0.1700** | **0.9750** | **1.1450** | **0.0458** | **0.9435** | **0.9892** | **0.0000** | **6,757.2459** | **6,757.2459** | **1.4182** | **0.0000** | **6,788.0095** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casing | Site Preparation | 9/16/2024 | 9/20/2024 | 5 | 5 | |
| 2 | Pilot borehole drilling | Building Construction | 9/23/2024 | 9/27/2024 | 5 | 5 | |
| 3 | Ream and caliper survey | Building Construction | 9/30/2024 | 10/4/2024 | 5 | 5 | |
| 4 | Well construction | Building Construction | 10/7/2024 | 10/11/2024 | 5 | 5 | |
| 5 | Well development - air lift and swab pt 1 | Building Construction | 10/14/2024 | 10/18/2024 | 5 | 5 | |
| 6 | Well development - air lift and swab pt 2 | Building Construction | 10/21/2024 | 10/23/2024 | 5 | 3 | |
| 7 | Well development - test pump install | Building Construction | 10/23/2024 | 10/25/2024 | 5 | 3 | |
| 8 | Well development - pumping | Building Construction | 10/28/2024 | 11/1/2024 | 5 | 5 | |
| 9 | Well testing | Building Construction | 11/4/2024 | 11/8/2024 | 5 | 5 | |
| 10 | Test pump removal | Building Construction | 11/11/2024 | 11/15/2024 | 5 | 5 | |
| 11 | Demobilization | Building Construction | 11/18/2024 | 11/22/2024 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Ream and caliper survey | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well development - air lift and swab pt 1 | Cranes | 0 | 0.00 | 231 | 0.29 |
| Site prep and conductor casing | Graders | 1 | 8.00 | 187 | 0.41 |
| Site prep and conductor casing | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Well development - air lift and swab pt 2 | Cranes | 0 | 0.00 | 231 | 0.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Well development - test pump install | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Well development - pumping | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Pilot borehole drilling | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Pilot borehole drilling | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Pilot borehole drilling | Tractors/Loaders/Backhoes | | 1 | 24.00 | 97 | 0.37 |
| Well testing | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Test pump removal | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Demobilization | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Ream and caliper survey | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Well construction | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Well development - air lift and swab pt 1 | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Well development - air lift and swab pt 2 | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Well development - test pump install | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Well development - pumping | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Well testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Test pump removal | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Ream and caliper survey | Tractors/Loaders/Backhoes | | 1 | 24.00 | 97 | 0.37 |
| Well construction | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Well development - air lift and swab pt 1 | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well development - air lift and swab pt 2 | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well development - test pump install | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well development - pumping | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Test pump removal | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing | Bore/Drill Rigs | | 1 | 8.00 | 221 | 0.50 |
| Pilot borehole drilling | Bore/Drill Rigs | | 1 | 24.00 | 221 | 0.50 |
| Pilot borehole drilling | Pumps | | 1 | 24.00 | 84 | 0.74 |
| Ream and caliper survey | Bore/Drill Rigs | | 1 | 24.00 | 221 | 0.50 |
| Ream and caliper survey | Pumps | | 1 | 24.00 | 84 | 0.74 |

| | | | | | |
|---|---|---|---|---|---|
| Well construction | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Well development - air lift and swab pt 1 | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well development - air lift and swab pt 1 | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well development - air lift and swab pt 2 | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well development - air lift and swab pt 2 | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well development - test pump install | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well development - test pump install | Pumps | 1 | 8.00 | 84 | 0.74 |
| Well development - pumping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well development - pumping | Pumps | 1 | 8.00 | 84 | 0.74 |
| Well testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well testing | Pumps | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Ream and caliper survey | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pilot borehole drilling | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - air lift and swab pt 1 | 3 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - air lift and swab pt 2 | 3 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site prep and conductor casing | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - test pump install | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - pumping | 3 | 8.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well testing | 3 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Test pump removal | 4 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demobilization | 4 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casing - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3300e-003 | 0.0000 | 2.3300e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8540 | 8.9627 | 8.1762 | 0.0224 | | 0.3307 | 0.3307 | | 0.3042 | 0.3042 | | 2,165.9911 | 2,165.9911 | 0.7005 | | 2,183.5042 |
| **Total** | **0.8540** | **8.9627** | **8.1762** | **0.0224** | **2.3300e-003** | **0.3307** | **0.3330** | **2.6000e-004** | **0.3042** | **0.3045** | | **2,165.9911** | **2,165.9911** | **0.7005** | | **2,183.5042** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 1.0500e-003 | 0.0000 | 1.0500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8540 | 8.9627 | 8.1762 | 0.0224 | | 0.3307 | 0.3307 | | 0.3042 | 0.3042 | 0.0000 | 2,165.9911 | 2,165.9911 | 0.7005 | | 2,183.5042 |
| **Total** | **0.8540** | **8.9627** | **8.1762** | **0.0224** | **1.0500e-003** | **0.3307** | **0.3317** | **1.2000e-004** | **0.3042** | **0.3043** | **0.0000** | **2,165.9911** | **2,165.9911** | **0.7005** | | **2,183.5042** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

## 3.3 Pilot borehole drilling - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | | 5,984.3469 | 5,984.3469 | 1.4132 | | 6,019.6763 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | | **5,984.3469** | **5,984.3469** | **1.4132** | | **6,019.6763** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.1400e-003 | 0.0857 | 0.0241 | 3.1000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.3000e-004 | 2.1300e-003 | | 32.9976 | 32.9976 | 1.2900e-003 | | 33.0297 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0340** | **0.2918** | **0.2849** | **1.4300e-003** | **0.0861** | **1.0900e-003** | **0.0872** | **0.0232** | **1.0200e-003** | **0.0242** | | **147.5492** | **147.5492** | **5.0500e-003** | | **147.6753** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | 0.0000 | 5,984.3469 | 5,984.3469 | 1.4132 | | 6,019.6763 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | **0.0000** | **5,984.3469** | **5,984.3469** | **1.4132** | | **6,019.6763** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 2.1400e-003 | 0.0857 | 0.0241 | 3.1000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.3000e-004 | 2.1300e-003 | | 32.9976 | 32.9976 | 1.2900e-003 | | 33.0297 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0340** | **0.2918** | **0.2849** | **1.4300e-003** | **0.0861** | **1.0900e-003** | **0.0872** | **0.0232** | **1.0200e-003** | **0.0242** | | **147.5492** | **147.5492** | **5.0500e-003** | | **147.6753** |

## 3.4 Ream and caliper survey - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | | 5,984.3469 | 5,984.3469 | 1.4132 | | 6,019.6763 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | | **5,984.3469** | **5,984.3469** | **1.4132** | | **6,019.6763** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.1400e-003 | 0.0857 | 0.0241 | 3.1000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.3000e-004 | 2.1300e-003 | | 32.9976 | 32.9976 | 1.2900e-003 | | 33.0297 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0340** | **0.2918** | **0.2849** | **1.4300e-003** | **0.0861** | **1.0900e-003** | **0.0872** | **0.0232** | **1.0200e-003** | **0.0242** | | **147.5492** | **147.5492** | **5.0500e-003** | | **147.6753** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | 0.0000 | 5,984.346 9 | 5,984.3469 | 1.4132 | | 6,019.676 3 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | **0.0000** | **5,984.346 9** | **5,984.3469** | **1.4132** | | **6,019.676 3** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.1400e-003 | 0.0857 | 0.0241 | 3.1000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.3000e-004 | 2.1300e-003 | | 32.9976 | 32.9976 | 1.2900e-003 | | 33.0297 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0340** | **0.2918** | **0.2849** | **1.4300e-003** | **0.0861** | **1.0900e-003** | **0.0872** | **0.0232** | **1.0200e-003** | **0.0242** | | **147.5492** | **147.5492** | **5.0500e-003** | | **147.6753** |

## 3.5 Well construction - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9748 | 9.9404 | 7.5655 | 0.0147 | | 0.4503 | 0.4503 | | 0.4143 | 0.4143 | | 1,420.7975 | 1,420.7975 | 0.4595 | | 1,432.2853 |
| **Total** | **0.9748** | **9.9404** | **7.5655** | **0.0147** | | **0.4503** | **0.4503** | | **0.4143** | **0.4143** | | **1,420.7975** | **1,420.7975** | **0.4595** | | **1,432.2853** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9748 | 9.9404 | 7.5655 | 0.0147 | | 0.4503 | 0.4503 | | 0.4143 | 0.4143 | 0.0000 | 1,420.7975 | 1,420.7975 | 0.4595 | | 1,432.2853 |
| **Total** | **0.9748** | **9.9404** | **7.5655** | **0.0147** | | **0.4503** | **0.4503** | | **0.4143** | **0.4143** | **0.0000** | **1,420.7975** | **1,420.7975** | **0.4595** | | **1,432.2853** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

## 3.6 Well development - air lift and swab pt 1 - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 4.2700e-003 | 0.1714 | 0.0481 | 6.2000e-004 | 0.0139 | 4.9000e-004 | 0.0144 | 3.7900e-003 | 4.7000e-004 | 4.2600e-003 | | 65.9952 | 65.9952 | 2.5700e-003 | | 66.0595 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0361** | **0.3775** | **0.3090** | **1.7400e-003** | **0.0931** | **1.3300e-003** | **0.0944** | **0.0251** | **1.2600e-003** | **0.0264** | | **180.5468** | **180.5468** | **6.3300e-003** | | **180.7051** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | 0.0000 | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | **0.0000** | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 4.2700e-003 | 0.1714 | 0.0481 | 6.2000e-004 | 0.0139 | 4.9000e-004 | 0.0144 | 3.7900e-003 | 4.7000e-004 | 4.2600e-003 | | 65.9952 | 65.9952 | 2.5700e-003 | | 66.0595 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0361** | **0.3775** | **0.3090** | **1.7400e-003** | **0.0931** | **1.3300e-003** | **0.0944** | **0.0251** | **1.2600e-003** | **0.0264** | | **180.5468** | **180.5468** | **6.3300e-003** | | **180.7051** |

### 3.7 Well development - air lift and swab pt 2 - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.5600e-003 | 0.1428 | 0.0401 | 5.1000e-004 | 0.0116 | 4.1000e-004 | 0.0120 | 3.1600e-003 | 3.9000e-004 | 3.5500e-003 | | 54.9960 | 54.9960 | 2.1400e-003 | | 55.0495 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0354** | **0.3489** | **0.3010** | **1.6300e-003** | **0.0908** | **1.2500e-003** | **0.0920** | **0.0245** | **1.1800e-003** | **0.0257** | | **169.5476** | **169.5476** | **5.9000e-003** | | **169.6952** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | 0.0000 | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | **0.0000** | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.5600e-003 | 0.1428 | 0.0401 | 5.1000e-004 | 0.0116 | 4.1000e-004 | 0.0120 | 3.1600e-003 | 3.9000e-004 | 3.5500e-003 | | 54.9960 | 54.9960 | 2.1400e-003 | | 55.0495 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0354** | **0.3489** | **0.3010** | **1.6300e-003** | **0.0908** | **1.2500e-003** | **0.0920** | **0.0245** | **1.1800e-003** | **0.0257** | | **169.5476** | **169.5476** | **5.9000e-003** | | **169.6952** |

## 3.8 Well development - test pump install - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | 0.0000 | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | **0.0000** | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.7600e-003 | 0.1872 | 0.0475 | 5.3000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.4000e-004 | 4.2200e-003 | | 55.8106 | 55.8106 | 1.9100e-003 | | 55.8583 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0319** | **0.2061** | **0.2609** | **1.1200e-003** | **0.0792** | **8.4000e-004** | **0.0801** | **0.0213** | **7.9000e-004** | **0.0221** | | **114.5517** | **114.5517** | **3.7600e-003** | | **114.6456** |

## 3.9 Well development - pumping - 2024

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0271** | **0.0189** | **0.2134** | **5.9000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **58.7411** | **58.7411** | **1.8500e-003** | | **58.7873** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | 0.0000 | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | **0.0000** | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0271 | 0.0189 | 0.2134 | 5.9000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 58.7411 | 58.7411 | 1.8500e-003 | | 58.7873 |
| **Total** | **0.0271** | **0.0189** | **0.2134** | **5.9000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **58.7411** | **58.7411** | **1.8500e-003** | | **58.7873** |

## 3.10 Well testing - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |
| **Total** | **0.0203** | **0.0142** | **0.1601** | **4.4000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **44.0558** | **44.0558** | **1.3900e-003** | | **44.0905** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | 0.0000 | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | **0.0000** | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |
| **Total** | **0.0203** | **0.0142** | **0.1601** | **4.4000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **44.0558** | **44.0558** | **1.3900e-003** | | **44.0905** |

## 3.11 Test pump removal - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |
| **Total** | **0.0203** | **0.0142** | **0.1601** | **4.4000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **44.0558** | **44.0558** | **1.3900e-003** | | **44.0905** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | 0.0000 | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | **0.0000** | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |
| **Total** | **0.0203** | **0.0142** | **0.1601** | **4.4000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **44.0558** | **44.0558** | **1.3900e-003** | | **44.0905** |

## 3.12 Demobilization - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |
| **Total** | **0.0203** | **0.0142** | **0.1601** | **4.4000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **44.0558** | **44.0558** | **1.3900e-003** | | **44.0905** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | 0.0000 | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | **0.0000** | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0203 | 0.0142 | 0.1601 | 4.4000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 44.0558 | 44.0558 | 1.3900e-003 | | 44.0905 |
| **Total** | **0.0203** | **0.0142** | **0.1601** | **4.4000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **44.0558** | **44.0558** | **1.3900e-003** | | **44.0905** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.586012 | 0.026671 | 0.206176 | 0.113932 | 0.017728 | 0.004552 | 0.021301 | 0.012716 | 0.001229 | 0.002351 | 0.005430 | 0.000986 | 0.000914 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| Land Use | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Unmitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - ASR Well Construction
## Santa Cruz County, Winter

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.10 | 1000sqft | 0.00 | 100.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2025 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - ASR Well Construction

Land Use - Surrogate land use for ASR water supply well

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - 12 CY of material export assumed for a ASR well

Trips and VMT - Construction vehicle information based on City input

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 50 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 150 | 0 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 3.00 |
| tblConstructionPhase | NumDays | 0.00 | 3.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | NumDays | 0.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 9/15/2024 | 9/27/2024 |
| tblConstructionPhase | PhaseEndDate | 9/15/2024 | 9/20/2024 |
| tblConstructionPhase | PhaseStartDate | 9/16/2024 | 9/23/2024 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 2.50 | 0.01 |
| tblGrading | MaterialExported | 0.00 | 12.00 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | LoadFactor | 0.40 | 0.40 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Bore/Drill Rigs |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 24.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 0.12 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 6.00 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 23,125.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.5949 | 22.6922 | 29.8236 | 0.0702 | 0.1700 | 0.9751 | 1.1450 | 0.0458 | 0.9435 | 0.9893 | 0.0000 | 6,748.5272 | 6,748.5272 | 1.4183 | 0.0000 | 6,779.2953 |
| **Maximum** | **2.5949** | **22.6922** | **29.8236** | **0.0702** | **0.1700** | **0.9751** | **1.1450** | **0.0458** | **0.9435** | **0.9893** | **0.0000** | **6,748.5272** | **6,748.5272** | **1.4183** | **0.0000** | **6,779.2953** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2024 | 2.5949 | 22.6922 | 29.8236 | 0.0702 | 0.1700 | 0.9751 | 1.1450 | 0.0458 | 0.9435 | 0.9893 | 0.0000 | 6,748.5272 | 6,748.5272 | 1.4183 | 0.0000 | 6,779.2953 |
| **Maximum** | **2.5949** | **22.6922** | **29.8236** | **0.0702** | **0.1700** | **0.9751** | **1.1450** | **0.0458** | **0.9435** | **0.9893** | **0.0000** | **6,748.5272** | **6,748.5272** | **1.4183** | **0.0000** | **6,779.2953** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **2.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site prep and conductor casing | Site Preparation | 9/16/2024 | 9/20/2024 | 5 | 5 | |
| 2 | Pilot borehole drilling | Building Construction | 9/23/2024 | 9/27/2024 | 5 | 5 | |
| 3 | Ream and caliper survey | Building Construction | 9/30/2024 | 10/4/2024 | 5 | 5 | |
| 4 | Well construction | Building Construction | 10/7/2024 | 10/11/2024 | 5 | 5 | |
| 5 | Well development - air lift and swab pt 1 | Building Construction | 10/14/2024 | 10/18/2024 | 5 | 5 | |
| 6 | Well development - air lift and swab pt 2 | Building Construction | 10/21/2024 | 10/23/2024 | 5 | 3 | |
| 7 | Well development - test pump install | Building Construction | 10/23/2024 | 10/25/2024 | 5 | 3 | |
| 8 | Well development - pumping | Building Construction | 10/28/2024 | 11/1/2024 | 5 | 5 | |
| 9 | Well testing | Building Construction | 11/4/2024 | 11/8/2024 | 5 | 5 | |
| 10 | Test pump removal | Building Construction | 11/11/2024 | 11/15/2024 | 5 | 5 | |
| 11 | Demobilization | Building Construction | 11/18/2024 | 11/22/2024 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Ream and caliper survey | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Well development - air lift and swab pt 1 | Cranes | 0 | 0.00 | 231 | 0.29 |
| Site prep and conductor casing | Graders | 1 | 8.00 | 187 | 0.41 |
| Site prep and conductor casing | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Well development - air lift and swab pt 2 | Cranes | 0 | 0.00 | 231 | 0.29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Well development - test pump install | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Well development - pumping | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Pilot borehole drilling | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Pilot borehole drilling | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Pilot borehole drilling | Tractors/Loaders/Backhoes | | 1 | 24.00 | 97 | 0.37 |
| Well testing | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Test pump removal | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Demobilization | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Ream and caliper survey | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Well construction | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Well development - air lift and swab pt 1 | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Well development - air lift and swab pt 2 | Forklifts | | 1 | 24.00 | 89 | 0.20 |
| Well development - test pump install | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Well development - pumping | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Well testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Test pump removal | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Ream and caliper survey | Tractors/Loaders/Backhoes | | 1 | 24.00 | 97 | 0.37 |
| Well construction | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Well development - air lift and swab pt 1 | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well development - air lift and swab pt 2 | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well development - test pump install | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well development - pumping | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Well testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Test pump removal | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Site prep and conductor casing | Bore/Drill Rigs | | 1 | 8.00 | 221 | 0.50 |
| Pilot borehole drilling | Bore/Drill Rigs | | 1 | 24.00 | 221 | 0.50 |
| Pilot borehole drilling | Pumps | | 1 | 24.00 | 84 | 0.74 |
| Ream and caliper survey | Bore/Drill Rigs | | 1 | 24.00 | 221 | 0.50 |
| Ream and caliper survey | Pumps | | 1 | 24.00 | 84 | 0.74 |

| | | | | | |
|---|---|---|---|---|---|
| Well construction | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Well development - air lift and swab pt 1 | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well development - air lift and swab pt 1 | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well development - air lift and swab pt 2 | Bore/Drill Rigs | 1 | 24.00 | 221 | 0.50 |
| Well development - air lift and swab pt 2 | Pumps | 1 | 24.00 | 84 | 0.74 |
| Well development - test pump install | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well development - test pump install | Pumps | 1 | 8.00 | 84 | 0.74 |
| Well development - pumping | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well development - pumping | Pumps | 1 | 8.00 | 84 | 0.74 |
| Well testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Well testing | Pumps | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Ream and caliper survey | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pilot borehole drilling | 4 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - air lift and swab pt 1 | 3 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - air lift and swab pt 2 | 3 | 8.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site prep and conductor casing | 4 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - test pump install | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well development - pumping | 3 | 8.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Well testing | 3 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Test pump removal | 4 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demobilization | 4 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site prep and conductor casing - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.3300e-003 | 0.0000 | 2.3300e-003 | 2.6000e-004 | 0.0000 | 2.6000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8540 | 8.9627 | 8.1762 | 0.0224 | | 0.3307 | 0.3307 | | 0.3042 | 0.3042 | | 2,165.9911 | 2,165.9911 | 0.7005 | | 2,183.5042 |
| **Total** | **0.8540** | **8.9627** | **8.1762** | **0.0224** | **2.3300e-003** | **0.3307** | **0.3330** | **2.6000e-004** | **0.3042** | **0.3045** | | **2,165.9911** | **2,165.9911** | **0.7005** | | **2,183.5042** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 1.0500e-003 | 0.0000 | 1.0500e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8540 | 8.9627 | 8.1762 | 0.0224 | | 0.3307 | 0.3307 | | 0.3042 | 0.3042 | 0.0000 | 2,165.9911 | 2,165.9911 | 0.7005 | | 2,183.5042 |
| **Total** | **0.8540** | **8.9627** | **8.1762** | **0.0224** | **1.0500e-003** | **0.3307** | **0.3317** | **1.2000e-004** | **0.3042** | **0.3043** | **0.0000** | **2,165.9911** | **2,165.9911** | **0.7005** | | **2,183.5042** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

## 3.3 Pilot borehole drilling - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | | 5,984.3469 | 5,984.3469 | 1.4132 | | 6,019.6763 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | | **5,984.3469** | **5,984.3469** | **1.4132** | | **6,019.6763** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.2000e-003 | 0.0870 | 0.0252 | 3.0000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.4000e-004 | 2.1400e-003 | | 32.5376 | 32.5376 | 1.3300e-003 | | 32.5708 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0378** | **0.2985** | **0.2930** | **1.3700e-003** | **0.0861** | **1.1100e-003** | **0.0873** | **0.0232** | **1.0500e-003** | **0.0243** | | **143.1132** | **143.1132** | **5.1400e-003** | | **143.2418** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | 0.0000 | 5,984.3469 | 5,984.3469 | 1.4132 | | 6,019.6763 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | **0.0000** | **5,984.3469** | **5,984.3469** | **1.4132** | | **6,019.6763** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 2.2000e-003 | 0.0870 | 0.0252 | 3.0000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.4000e-004 | 2.1400e-003 | | 32.5376 | 32.5376 | 1.3300e-003 | | 32.5708 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0378** | **0.2985** | **0.2930** | **1.3700e-003** | **0.0861** | **1.1100e-003** | **0.0873** | **0.0232** | **1.0500e-003** | **0.0243** | | **143.1132** | **143.1132** | **5.1400e-003** | | **143.2418** |

## 3.4 Ream and caliper survey - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | | 5,984.3469 | 5,984.3469 | 1.4132 | | 6,019.6763 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | | **5,984.3469** | **5,984.3469** | **1.4132** | | **6,019.6763** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.2000e-003 | 0.0870 | 0.0252 | 3.0000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.4000e-004 | 2.1400e-003 | | 32.5376 | 32.5376 | 1.3300e-003 | | 32.5708 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0378** | **0.2985** | **0.2930** | **1.3700e-003** | **0.0861** | **1.1100e-003** | **0.0873** | **0.0232** | **1.0500e-003** | **0.0243** | | **143.1132** | **143.1132** | **5.1400e-003** | | **143.2418** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.2667 | 20.4624 | 27.4298 | 0.0623 | | 0.8933 | 0.8933 | | 0.8500 | 0.8500 | 0.0000 | 5,984.3469 | 5,984.3469 | 1.4132 | | 6,019.6763 |
| **Total** | **2.2667** | **20.4624** | **27.4298** | **0.0623** | | **0.8933** | **0.8933** | | **0.8500** | **0.8500** | **0.0000** | **5,984.3469** | **5,984.3469** | **1.4132** | | **6,019.6763** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.2000e-003 | 0.0870 | 0.0252 | 3.0000e-004 | 6.9300e-003 | 2.5000e-004 | 7.1800e-003 | 1.8900e-003 | 2.4000e-004 | 2.1400e-003 | | 32.5376 | 32.5376 | 1.3300e-003 | | 32.5708 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0378** | **0.2985** | **0.2930** | **1.3700e-003** | **0.0861** | **1.1100e-003** | **0.0873** | **0.0232** | **1.0500e-003** | **0.0243** | | **143.1132** | **143.1132** | **5.1400e-003** | | **143.2418** |

# 3.5 Well construction - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.9748 | 9.9404 | 7.5655 | 0.0147 | | 0.4503 | 0.4503 | | 0.4143 | 0.4143 | | 1,420.7975 | 1,420.7975 | 0.4595 | | 1,432.2853 |
| **Total** | **0.9748** | **9.9404** | **7.5655** | **0.0147** | | **0.4503** | **0.4503** | | **0.4143** | **0.4143** | | **1,420.7975** | **1,420.7975** | **0.4595** | | **1,432.2853** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9748 | 9.9404 | 7.5655 | 0.0147 | | 0.4503 | 0.4503 | | 0.4143 | 0.4143 | 0.0000 | 1,420.7975 | 1,420.7975 | 0.4595 | | 1,432.2853 |
| **Total** | **0.9748** | **9.9404** | **7.5655** | **0.0147** | | **0.4503** | **0.4503** | | **0.4143** | **0.4143** | **0.0000** | **1,420.7975** | **1,420.7975** | **0.4595** | | **1,432.2853** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

# 3.6 Well development - air lift and swab pt 1 - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 4.3900e-003 | 0.1741 | 0.0504 | 6.1000e-004 | 0.0139 | 5.1000e-004 | 0.0144 | 3.7900e-003 | 4.9000e-004 | 4.2700e-003 | | 65.0752 | 65.0752 | 2.6500e-003 | | 65.1416 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0400** | **0.3855** | **0.3182** | **1.6800e-003** | **0.0931** | **1.3700e-003** | **0.0944** | **0.0251** | **1.3000e-003** | **0.0264** | | **175.6509** | **175.6509** | **6.4600e-003** | | **175.8125** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | 0.0000 | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | **0.0000** | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 4.3900e-003 | 0.1741 | 0.0504 | 6.1000e-004 | 0.0139 | 5.1000e-004 | 0.0144 | 3.7900e-003 | 4.9000e-004 | 4.2700e-003 | | 65.0752 | 65.0752 | 2.6500e-003 | | 65.1416 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |

| **Total** | **0.0400** | **0.3855** | **0.3182** | **1.6800e-003** | **0.0931** | **1.3700e-003** | **0.0944** | **0.0251** | **1.3000e-003** | **0.0264** | | **175.6509** | **175.6509** | **6.4600e-003** | | **175.8125** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 3.7 Well development - air lift and swab pt 2 - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.6600e-003 | 0.1451 | 0.0420 | 5.1000e-004 | 0.0116 | 4.2000e-004 | 0.0120 | 3.1600e-003 | 4.0000e-004 | 3.5600e-003 | | 54.2294 | 54.2294 | 2.2100e-003 | | 54.2846 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0393** | **0.3565** | **0.3098** | **1.5800e-003** | **0.0908** | **1.2800e-003** | **0.0920** | **0.0245** | **1.2100e-003** | **0.0257** | | **164.8050** | **164.8050** | **6.0200e-003** | | **164.9556** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.8349 | 16.1177 | 20.7230 | 0.0529 | | 0.6939 | 0.6939 | | 0.6665 | 0.6665 | 0.0000 | 5,079.0467 | 5,079.0467 | 1.1204 | | 5,107.0563 |
| **Total** | **1.8349** | **16.1177** | **20.7230** | **0.0529** | | **0.6939** | **0.6939** | | **0.6665** | **0.6665** | **0.0000** | **5,079.0467** | **5,079.0467** | **1.1204** | | **5,107.0563** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.6600e-003 | 0.1451 | 0.0420 | 5.1000e-004 | 0.0116 | 4.2000e-004 | 0.0120 | 3.1600e-003 | 4.0000e-004 | 3.5600e-003 | | 54.2294 | 54.2294 | 2.2100e-003 | | 54.2846 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0393** | **0.3565** | **0.3098** | **1.5800e-003** | **0.0908** | **1.2800e-003** | **0.0920** | **0.0245** | **1.2100e-003** | **0.0257** | | **164.8050** | **164.8050** | **6.0200e-003** | | **164.9556** |

## 3.8 Well development - test pump install - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | 0.0000 | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | **0.0000** | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 5.0800e-003 | 0.1880 | 0.0536 | 5.1000e-004 | 0.0135 | 3.7000e-004 | 0.0139 | 3.8800e-003 | 3.6000e-004 | 4.2400e-003 | | 54.6067 | 54.6067 | 2.0300e-003 | | 54.6575 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0356** | **0.2115** | **0.2678** | **1.0700e-003** | **0.0792** | **8.6000e-004** | **0.0801** | **0.0213** | **8.1000e-004** | **0.0221** | | **110.5756** | **110.5756** | **3.8100e-003** | | **110.6710** |

## 3.9 Well development - pumping - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0306** | **0.0235** | **0.2142** | **5.6000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **55.9690** | **55.9690** | **1.7800e-003** | | **56.0135** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | 0.0000 | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | **0.0000** | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0306 | 0.0235 | 0.2142 | 5.6000e-004 | 0.0657 | 4.9000e-004 | 0.0662 | 0.0174 | 4.5000e-004 | 0.0179 | | 55.9690 | 55.9690 | 1.7800e-003 | | 56.0135 |
| **Total** | **0.0306** | **0.0235** | **0.2142** | **5.6000e-004** | **0.0657** | **4.9000e-004** | **0.0662** | **0.0174** | **4.5000e-004** | **0.0179** | | **55.9690** | **55.9690** | **1.7800e-003** | | **56.0135** |

## 3.10 Well testing - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
| **Total** | **0.6851** | **6.0066** | **8.5230** | **0.0147** | | **0.2791** | **0.2791** | | **0.2750** | **0.2750** | | **1,394.1000** | **1,394.1000** | **0.1005** | | **1,396.6125** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |
| **Total** | **0.0229** | **0.0176** | **0.1607** | **4.2000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **41.9767** | **41.9767** | **1.3400e-003** | | **42.0101** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | 0.0000 | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |

| Total | 0.6851 | 6.0066 | 8.5230 | 0.0147 | | 0.2791 | 0.2791 | | 0.2750 | 0.2750 | 0.0000 | 1,394.1000 | 1,394.1000 | 0.1005 | | 1,396.6125 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |
| **Total** | **0.0229** | **0.0176** | **0.1607** | **4.2000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **41.9767** | **41.9767** | **1.3400e-003** | | **42.0101** |

## 3.11 Test pump removal - 2024

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |
| **Total** | **0.0229** | **0.0176** | **0.1607** | **4.2000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **41.9767** | **41.9767** | **1.3400e-003** | | **42.0101** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | 0.0000 | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | **0.0000** | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |
| **Total** | **0.0229** | **0.0176** | **0.1607** | **4.2000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **41.9767** | **41.9767** | **1.3400e-003** | | **42.0101** |

## 3.12 Demobilization - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |
| **Total** | **0.0229** | **0.0176** | **0.1607** | **4.2000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **41.9767** | **41.9767** | **1.3400e-003** | | **42.0101** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5479 | 5.5322 | 6.4979 | 0.0107 | | 0.2569 | 0.2569 | | 0.2363 | 0.2363 | 0.0000 | 1,030.9680 | 1,030.9680 | 0.3334 | | 1,039.3039 |
| **Total** | **0.5479** | **5.5322** | **6.4979** | **0.0107** | | **0.2569** | **0.2569** | | **0.2363** | **0.2363** | **0.0000** | **1,030.9680** | **1,030.9680** | **0.3334** | | **1,039.3039** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0229 | 0.0176 | 0.1607 | 4.2000e-004 | 0.0493 | 3.7000e-004 | 0.0497 | 0.0131 | 3.4000e-004 | 0.0134 | | 41.9767 | 41.9767 | 1.3400e-003 | | 42.0101 |
| **Total** | **0.0229** | **0.0176** | **0.1607** | **4.2000e-004** | **0.0493** | **3.7000e-004** | **0.0497** | **0.0131** | **3.4000e-004** | **0.0134** | | **41.9767** | **41.9767** | **1.3400e-003** | | **42.0101** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.586012 | 0.026671 | 0.206176 | 0.113932 | 0.017728 | 0.004552 | 0.021301 | 0.012716 | 0.001229 | 0.002351 | 0.005430 | 0.000986 | 0.000914 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| Land Use | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| Unmitigated | 2.1400e-003 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 2.1400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.0000e-005 | 2.0000e-005 | 0.0000 | | 2.0000e-005 |
| **Total** | **2.1400e-003** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.0000e-005** | **2.0000e-005** | **0.0000** | | **2.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - ASR Treatment Facility Construction
**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 1.23 | 1000sqft | 0.03 | 1,225.00 | 0 |
| Other Asphalt Surfaces | 0.22 | Acre | 0.22 | 9,583.20 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2026 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - ASR Treatment Faciity Construction

Land Use - Surrogate land uses for ASR facilities

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - 100 CY of material assumed to be exported and 2.5 acres assumed to be total disturbed based on model default and multiple passes with the grader

Trips and VMT - Construction vehicle information based on City input

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

Architectural Coating - Default coating EF

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 613 | 50 |
| tblAreaCoating | Area_Nonresidential_Interior | 1838 | 150 |
| tblAreaCoating | Area_Parking | 575 | 0 |
| tblConstructionPhase | NumDays | 2.00 | 10.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 20.00 |
| tblConstructionPhase | NumDays | 100.00 | 30.00 |
| tblConstructionPhase | NumDays | 100.00 | 25.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 1/10/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 4/4/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 5/16/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 6/20/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 7/4/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 7/25/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 8/15/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 8/29/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 9/5/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 9/12/2025 |

| | | | |
|---|---|---|---|
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 3/10/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 4/7/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 5/19/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 6/23/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 7/6/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 7/28/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 8/18/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 9/1/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 9/8/2025 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 5.00 | 2.50 |
| tblGrading | MaterialExported | 0.00 | 100.00 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.20 | 0.20 |
| tblOffRoadEquipment | LoadFactor | 0.37 | 0.37 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblSolidWaste | SolidWasteGenerationRate | 1.53 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 284,437.50 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2025 | 0.0981 | 0.7848 | 1.1158 | 2.0100e-003 | 9.7900e-003 | 0.0311 | 0.0409 | 2.2200e-003 | 0.0301 | 0.0323 | 0.0000 | 173.5186 | 173.5186 | 0.0244 | 0.0000 | 174.1278 |
| **Maximum** | **0.0981** | **0.7848** | **1.1158** | **2.0100e-003** | **9.7900e-003** | **0.0311** | **0.0409** | **2.2200e-003** | **0.0301** | **0.0323** | **0.0000** | **173.5186** | **173.5186** | **0.0244** | **0.0000** | **174.1278** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2025 | 0.0981 | 0.7848 | 1.1158 | 2.0100e-003 | 8.3300e-003 | 0.0311 | 0.0395 | 2.0600e-003 | 0.0301 | 0.0321 | 0.0000 | 173.5184 | 173.5184 | 0.0244 | 0.0000 | 174.1276 |
| **Maximum** | **0.0981** | **0.7848** | **1.1158** | **2.0100e-003** | **8.3300e-003** | **0.0311** | **0.0395** | **2.0600e-003** | **0.0301** | **0.0321** | **0.0000** | **173.5184** | **173.5184** | **0.0244** | **0.0000** | **174.1276** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **14.91** | **0.00** | **3.57** | **7.21** | **0.00** | **0.50** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **1-6-2025** | **4-5-2025** | 0.3390 | 0.3390 |
| **2** | **4-6-2025** | **7-5-2025** | 0.3355 | 0.3355 |
| **3** | **7-6-2025** | **9-30-2025** | 0.1352 | 0.1352 |
| | | **Highest** | 0.3390 | 0.3390 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 5.4700e-003 | 0.0000 | 2.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.0000e-005 | 4.0000e-005 | 0.0000 | 0.0000 | 4.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **5.4700e-003** | **0.0000** | **2.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **4.0000e-005** | **4.0000e-005** | **0.0000** | **0.0000** | **4.0000e-005** |

## Mitigated Operational

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 5.4700e-003 | 0.0000 | 2.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.0000e-005 | 4.0000e-005 | 0.0000 | 0.0000 | 4.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **5.4700e-003** | **0.0000** | **2.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **4.0000e-005** | **4.0000e-005** | **0.0000** | **0.0000** | **4.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 1/6/2025 | 1/10/2025 | 5 | 5 | |
| 2 | Earthwork and Compaction | Grading | 1/13/2025 | 1/24/2025 | 5 | 10 | |
| 3 | Subgrade pipeline and electrical | Trenching | 1/27/2025 | 3/7/2025 | 5 | 30 | |
| 4 | Foundations and slabs | Building Construction | 3/10/2025 | 4/4/2025 | 5 | 20 | |
| 5 | Building construction | Building Construction | 4/7/2025 | 5/16/2025 | 5 | 30 | |
| 6 | Tank construction | Building Construction | 5/19/2025 | 6/20/2025 | 5 | 25 | |
| 7 | Equipment installation | Building Construction | 6/23/2025 | 7/4/2025 | 5 | 10 | |
| 8 | Wellhead slab | Building Construction | 7/6/2025 | 7/25/2025 | 5 | 15 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | Filters | Building Construction | 7/28/2025 | 8/15/2025 | 5 | 15 | |
| 10 | MCC installation | Building Construction | 8/18/2025 | 8/29/2025 | 5 | 10 | |
| 11 | Facility startup and testing | Building Construction | 9/1/2025 | 9/5/2025 | 5 | 5 | |
| 12 | Architectural coatings | Architectural Coating | 9/1/2025 | 9/5/2025 | 5 | 5 | |
| 13 | Demobilization | Building Construction | 9/8/2025 | 9/12/2025 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.22**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,838; Non-Residential Outdoor: 613; Striped Parking Area:**

**<u>OffRoad Equipment</u>**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Tank construction | Cranes | 1 | 4.00 | 231 | 0.29 |
| Equipment installation | Cranes | 1 | 4.00 | 231 | 0.29 |
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Wellhead slab | Cranes | 1 | 4.00 | 231 | 0.29 |
| Filters | Cranes | 1 | 4.00 | 231 | 0.29 |
| MCC installation | Cranes | 1 | 4.00 | 231 | 0.29 |
| Foundations and slabs | Cranes | 0 | 0.00 | 231 | 0.29 |
| Foundations and slabs | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Foundations and slabs | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Earthwork and Compaction | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Tank construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Equipment installation | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead slab | Forklifts | 1 | 8.00 | 89 | 0.20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Filters | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| MCC installation | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Earthwork and Compaction | Rubber Tired Dozers | | 0 | 0.00 | 247 | 0.40 |
| Demobilization | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Tank construction | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Equipment installation | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Wellhead slab | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Filters | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| MCC installation | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Facility startup and testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Earthwork and Compaction | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Demobilization | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Earthwork and Compaction | Graders | | 1 | 8.00 | 187 | 0.41 |
| Building construction | Aerial Lifts | | 1 | 8.00 | 63 | 0.31 |
| Building construction | Cement and Mortar Mixers | | 1 | 8.00 | 9 | 0.56 |
| Tank construction | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Equipment installation | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Wellhead slab | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Demobilization | Pavers | | 1 | 4.00 | 130 | 0.42 |
| Demobilization | Paving Equipment | | 1 | 4.00 | 132 | 0.36 |
| Demobilization | Rollers | | 1 | 4.00 | 80 | 0.38 |
| Architectural coatings | Air Compressors | | 1 | 6.00 | 78 | 0.48 |
| Filters | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| MCC installation | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Facility startup and testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Subgrade pipeline and electrical | Concrete/Industrial Saws | | 1 | 8.00 | 81 | 0.73 |
| Subgrade pipeline and electrical | Excavators | | 1 | 8.00 | 158 | 0.38 |
| Subgrade pipeline and electrical | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Subgrade pipeline and electrical | Pumps | | 1 | 8.00 | 84 | 0.74 |

| | | | | | |
|---|---|---|---|---|---|
| Subgrade pipeline and electrical | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Foundations and slabs | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Foundations and slabs | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Foundations and slabs | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Foundations and slabs | Welders | 1 | 8.00 | 46 | 0.45 |
| Building construction | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Building construction | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Foundations and slabs | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Equipment installation | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead slab | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Mobilization | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Filters | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| MCC installation | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Earthwork and Compaction | 3 | 8.00 | 2.00 | 8.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Subgrade pipeline and electrical | 5 | 8.00 | 4.00 | 6.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural coatings | 1 | 1.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.3300e-003 | 0.0000 | 1.3300e-003 | 1.4000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.4400e-003 | 0.0153 | 0.0151 | 3.0000e-005 | | 5.5000e-004 | 5.5000e-004 | | 5.0000e-004 | 5.0000e-004 | 0.0000 | 2.8221 | 2.8221 | 9.1000e-004 | 0.0000 | 2.8450 |
| **Total** | **1.4400e-003** | **0.0153** | **0.0151** | **3.0000e-005** | **1.3300e-003** | **5.5000e-004** | **1.8800e-003** | **1.4000e-004** | **5.0000e-004** | **6.4000e-004** | **0.0000** | **2.8221** | **2.8221** | **9.1000e-004** | **0.0000** | **2.8450** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1247 | 0.1247 | 0.0000 | 0.0000 | 0.1248 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.7000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1220 | 0.1220 | 0.0000 | 0.0000 | 0.1221 |
| **Total** | **7.0000e-005** | **5.1000e-004** | **5.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2468** | **0.2468** | **0.0000** | **0.0000** | **0.2470** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 6.0000e-004 | 0.0000 | 6.0000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.4400e-003 | 0.0153 | 0.0151 | 3.0000e-005 | | 5.5000e-004 | 5.5000e-004 | | 5.0000e-004 | 5.0000e-004 | 0.0000 | 2.8221 | 2.8221 | 9.1000e-004 | 0.0000 | 2.8450 |
| **Total** | **1.4400e-003** | **0.0153** | **0.0151** | **3.0000e-005** | **6.0000e-004** | **5.5000e-004** | **1.1500e-003** | **6.0000e-005** | **5.0000e-004** | **5.6000e-004** | **0.0000** | **2.8221** | **2.8221** | **9.1000e-004** | **0.0000** | **2.8450** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1247 | 0.1247 | 0.0000 | 0.0000 | 0.1248 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.7000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1220 | 0.1220 | 0.0000 | 0.0000 | 0.1221 |
| **Total** | **7.0000e-005** | **5.1000e-004** | **5.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2468** | **0.2468** | **0.0000** | **0.0000** | **0.2470** |

## 3.3 Earthwork and Compaction - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.3300e-003 | 0.0000 | 1.3300e-003 | 1.4000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.8800e-003 | 0.0306 | 0.0303 | 6.0000e-005 | | 1.1000e-003 | 1.1000e-003 | | 1.0100e-003 | 1.0100e-003 | 0.0000 | 5.6443 | 5.6443 | 1.8300e-003 | 0.0000 | 5.6899 |
| **Total** | **2.8800e-003** | **0.0306** | **0.0303** | **6.0000e-005** | **1.3300e-003** | **1.1000e-003** | **2.4300e-003** | **1.4000e-004** | **1.0100e-003** | **1.1500e-003** | **0.0000** | **5.6443** | **5.6443** | **1.8300e-003** | **0.0000** | **5.6899** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.0000e-005 | 8.3000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2955 | 0.2955 | 1.0000e-005 | 0.0000 | 0.2958 |
| Vendor | 2.0000e-005 | 9.2000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2495 | 0.2495 | 1.0000e-005 | 0.0000 | 0.2497 |
| Worker | 1.3000e-004 | 1.0000e-004 | 9.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2441 | 0.2441 | 1.0000e-005 | 0.0000 | 0.2443 |
| **Total** | **1.7000e-004** | **1.8500e-003** | **1.4300e-003** | **0.0000** | **4.6000e-004** | **0.0000** | **4.6000e-004** | **1.2000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **0.7891** | **0.7891** | **3.0000e-005** | **0.0000** | **0.7898** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 6.0000e-004 | 0.0000 | 6.0000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.8800e-003 | 0.0306 | 0.0303 | 6.0000e-005 | | 1.1000e-003 | 1.1000e-003 | | 1.0100e-003 | 1.0100e-003 | 0.0000 | 5.6443 | 5.6443 | 1.8300e-003 | 0.0000 | 5.6899 |
| **Total** | **2.8800e-003** | **0.0306** | **0.0303** | **6.0000e-005** | **6.0000e-004** | **1.1000e-003** | **1.7000e-003** | **6.0000e-005** | **1.0100e-003** | **1.0700e-003** | **0.0000** | **5.6443** | **5.6443** | **1.8300e-003** | **0.0000** | **5.6899** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.0000e-005 | 8.3000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2955 | 0.2955 | 1.0000e-005 | 0.0000 | 0.2958 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 2.0000e-005 | 9.2000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2495 | 0.2495 | 1.0000e-005 | 0.0000 | 0.2497 |
| Worker | 1.3000e-004 | 1.0000e-004 | 9.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2441 | 0.2441 | 1.0000e-005 | 0.0000 | 0.2443 |
| **Total** | **1.7000e-004** | **1.8500e-003** | **1.4300e-003** | **0.0000** | **4.6000e-004** | **0.0000** | **4.6000e-004** | **1.2000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **0.7891** | **0.7891** | **3.0000e-005** | **0.0000** | **0.7898** |

## 3.4 Subgrade pipeline and electrical - 2025

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0145 | 0.1211 | 0.2099 | 3.4000e-004 | | 5.2800e-003 | 5.2800e-003 | | 5.0900e-003 | 5.0900e-003 | 0.0000 | 29.5036 | 29.5036 | 4.8900e-003 | 0.0000 | 29.6258 |
| **Total** | **0.0145** | **0.1211** | **0.2099** | **3.4000e-004** | | **5.2800e-003** | **5.2800e-003** | | **5.0900e-003** | **5.0900e-003** | **0.0000** | **29.5036** | **29.5036** | **4.8900e-003** | **0.0000** | **29.6258** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.0000e-005 | 6.2000e-004 | 1.8000e-004 | 0.0000 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2216 | 0.2216 | 1.0000e-005 | 0.0000 | 0.2219 |
| Vendor | 1.4000e-004 | 5.4900e-003 | 1.4300e-003 | 2.0000e-005 | 3.9000e-004 | 1.0000e-005 | 4.0000e-004 | 1.1000e-004 | 1.0000e-005 | 1.2000e-004 | 0.0000 | 1.4967 | 1.4967 | 5.0000e-005 | 0.0000 | 1.4981 |
| Worker | 3.9000e-004 | 2.9000e-004 | 2.8400e-003 | 1.0000e-005 | 9.5000e-004 | 1.0000e-005 | 9.6000e-004 | 2.5000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.7322 | 0.7322 | 2.0000e-005 | 0.0000 | 0.7328 |
| **Total** | **5.5000e-004** | **6.4000e-003** | **4.4500e-003** | **3.0000e-005** | **1.3900e-003** | **2.0000e-005** | **1.4100e-003** | **3.7000e-004** | **2.0000e-005** | **4.0000e-004** | **0.0000** | **2.4506** | **2.4506** | **8.0000e-005** | **0.0000** | **2.4527** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0145 | 0.1211 | 0.2099 | 3.4000e-004 | | 5.2800e-003 | 5.2800e-003 | | 5.0900e-003 | 5.0900e-003 | 0.0000 | 29.5036 | 29.5036 | 4.8900e-003 | 0.0000 | 29.6258 |
| **Total** | **0.0145** | **0.1211** | **0.2099** | **3.4000e-004** | | **5.2800e-003** | **5.2800e-003** | | **5.0900e-003** | **5.0900e-003** | **0.0000** | **29.5036** | **29.5036** | **4.8900e-003** | **0.0000** | **29.6258** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.0000e-005 | 6.2000e-004 | 1.8000e-004 | 0.0000 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2216 | 0.2216 | 1.0000e-005 | 0.0000 | 0.2219 |
| Vendor | 1.4000e-004 | 5.4900e-003 | 1.4300e-003 | 2.0000e-005 | 3.9000e-004 | 1.0000e-005 | 4.0000e-004 | 1.1000e-004 | 1.0000e-005 | 1.2000e-004 | 0.0000 | 1.4967 | 1.4967 | 5.0000e-005 | 0.0000 | 1.4981 |
| Worker | 3.9000e-004 | 2.9000e-004 | 2.8400e-003 | 1.0000e-005 | 9.5000e-004 | 1.0000e-005 | 9.6000e-004 | 2.5000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.7322 | 0.7322 | 2.0000e-005 | 0.0000 | 0.7328 |
| **Total** | **5.5000e-004** | **6.4000e-003** | **4.4500e-003** | **3.0000e-005** | **1.3900e-003** | **2.0000e-005** | **1.4100e-003** | **3.7000e-004** | **2.0000e-005** | **4.0000e-004** | **0.0000** | **2.4506** | **2.4506** | **8.0000e-005** | **0.0000** | **2.4527** |

# 3.5 Foundations and slabs - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.0173 | 0.1530 | 0.2328 | 3.9000e-004 | | 5.9800e-003 | 5.9800e-003 | | 5.8500e-003 | 5.8500e-003 | 0.0000 | 33.2388 | 33.2388 | 3.7400e-003 | 0.0000 | 33.3324 |
| **Total** | **0.0173** | **0.1530** | **0.2328** | **3.9000e-004** | | **5.9800e-003** | **5.9800e-003** | | **5.8500e-003** | **5.8500e-003** | **0.0000** | **33.2388** | **33.2388** | **3.7400e-003** | **0.0000** | **33.3324** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 5.0000e-005 | 1.8300e-003 | 4.8000e-004 | 1.0000e-005 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.4989 | 0.4989 | 2.0000e-005 | 0.0000 | 0.4994 |
| Worker | 2.6000e-004 | 1.9000e-004 | 1.8900e-003 | 1.0000e-005 | 6.3000e-004 | 0.0000 | 6.4000e-004 | 1.7000e-004 | 0.0000 | 1.7000e-004 | 0.0000 | 0.4882 | 0.4882 | 1.0000e-005 | 0.0000 | 0.4885 |
| **Total** | **3.1000e-004** | **2.0200e-003** | **2.3700e-003** | **2.0000e-005** | **7.6000e-004** | **0.0000** | **7.7000e-004** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **0.9871** | **0.9871** | **3.0000e-005** | **0.0000** | **0.9879** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0173 | 0.1530 | 0.2328 | 3.9000e-004 | | 5.9800e-003 | 5.9800e-003 | | 5.8500e-003 | 5.8500e-003 | 0.0000 | 33.2388 | 33.2388 | 3.7400e-003 | 0.0000 | 33.3323 |
| **Total** | **0.0173** | **0.1530** | **0.2328** | **3.9000e-004** | | **5.9800e-003** | **5.9800e-003** | | **5.8500e-003** | **5.8500e-003** | **0.0000** | **33.2388** | **33.2388** | **3.7400e-003** | **0.0000** | **33.3323** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 5.0000e-005 | 1.8300e-003 | 4.8000e-004 | 1.0000e-005 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.4989 | 0.4989 | 2.0000e-005 | 0.0000 | 0.4994 |
| Worker | 2.6000e-004 | 1.9000e-004 | 1.8900e-003 | 1.0000e-005 | 6.3000e-004 | 0.0000 | 6.4000e-004 | 1.7000e-004 | 0.0000 | 1.7000e-004 | 0.0000 | 0.4882 | 0.4882 | 1.0000e-005 | 0.0000 | 0.4885 |
| **Total** | **3.1000e-004** | **2.0200e-003** | **2.3700e-003** | **2.0000e-005** | **7.6000e-004** | **0.0000** | **7.7000e-004** | **2.1000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **0.9871** | **0.9871** | **3.0000e-005** | **0.0000** | **0.9879** |

## 3.6 Building construction - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0259 | 0.2295 | 0.3491 | 5.9000e-004 | | 8.9600e-003 | 8.9600e-003 | | 8.7700e-003 | 8.7700e-003 | 0.0000 | 49.8582 | 49.8582 | 5.6100e-003 | 0.0000 | 49.9986 |
| **Total** | **0.0259** | **0.2295** | **0.3491** | **5.9000e-004** | | **8.9600e-003** | **8.9600e-003** | | **8.7700e-003** | **8.7700e-003** | **0.0000** | **49.8582** | **49.8582** | **5.6100e-003** | **0.0000** | **49.9986** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 7.0000e-005 | 2.7500e-003 | 7.2000e-004 | 1.0000e-005 | 2.0000e-004 | 1.0000e-005 | 2.0000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.7484 | 0.7484 | 3.0000e-005 | 0.0000 | 0.7490 |
| Worker | 3.9000e-004 | 2.9000e-004 | 2.8400e-003 | 1.0000e-005 | 9.5000e-004 | 1.0000e-005 | 9.6000e-004 | 2.5000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.7322 | 0.7322 | 2.0000e-005 | 0.0000 | 0.7328 |
| **Total** | **4.6000e-004** | **3.0400e-003** | **3.5600e-003** | **2.0000e-005** | **1.1500e-003** | **2.0000e-005** | **1.1600e-003** | **3.1000e-004** | **1.0000e-005** | **3.2000e-004** | **0.0000** | **1.4806** | **1.4806** | **5.0000e-005** | **0.0000** | **1.4818** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0259 | 0.2295 | 0.3491 | 5.9000e-004 | | 8.9600e-003 | 8.9600e-003 | | 8.7700e-003 | 8.7700e-003 | 0.0000 | 49.8581 | 49.8581 | 5.6100e-003 | 0.0000 | 49.9985 |
| **Total** | **0.0259** | **0.2295** | **0.3491** | **5.9000e-004** | | **8.9600e-003** | **8.9600e-003** | | **8.7700e-003** | **8.7700e-003** | **0.0000** | **49.8581** | **49.8581** | **5.6100e-003** | **0.0000** | **49.9985** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 7.0000e-005 | 2.7500e-003 | 7.2000e-004 | 1.0000e-005 | 2.0000e-004 | 1.0000e-005 | 2.0000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.7484 | 0.7484 | 3.0000e-005 | 0.0000 | 0.7490 |
| Worker | 3.9000e-004 | 2.9000e-004 | 2.8400e-003 | 1.0000e-005 | 9.5000e-004 | 1.0000e-005 | 9.6000e-004 | 2.5000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.7322 | 0.7322 | 2.0000e-005 | 0.0000 | 0.7328 |
| **Total** | **4.6000e-004** | **3.0400e-003** | **3.5600e-003** | **2.0000e-005** | **1.1500e-003** | **2.0000e-005** | **1.1600e-003** | **3.1000e-004** | **1.0000e-005** | **3.2000e-004** | **0.0000** | **1.4806** | **1.4806** | **5.0000e-005** | **0.0000** | **1.4818** |

## 3.7 Tank construction - 2025

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.3700e-003 | 0.0600 | 0.0708 | 1.4000e-004 | | 2.5800e-003 | 2.5800e-003 | | 2.4700e-003 | 2.4700e-003 | 0.0000 | 11.9122 | 11.9122 | 1.8300e-003 | 0.0000 | 11.9579 |
| **Total** | **6.3700e-003** | **0.0600** | **0.0708** | **1.4000e-004** | | **2.5800e-003** | **2.5800e-003** | | **2.4700e-003** | **2.4700e-003** | **0.0000** | **11.9122** | **11.9122** | **1.8300e-003** | **0.0000** | **11.9579** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 6.0000e-005 | 2.2900e-003 | 6.0000e-004 | 1.0000e-005 | 1.6000e-004 | 0.0000 | 1.7000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.6236 | 0.6236 | 2.0000e-005 | 0.0000 | 0.6242 |
| Worker | 3.2000e-004 | 2.4000e-004 | 2.3700e-003 | 1.0000e-005 | 7.9000e-004 | 1.0000e-005 | 8.0000e-004 | 2.1000e-004 | 1.0000e-005 | 2.2000e-004 | 0.0000 | 0.6102 | 0.6102 | 2.0000e-005 | 0.0000 | 0.6107 |
| **Total** | **3.8000e-004** | **2.5300e-003** | **2.9700e-003** | **2.0000e-005** | **9.5000e-004** | **1.0000e-005** | **9.7000e-004** | **2.6000e-004** | **1.0000e-005** | **2.7000e-004** | **0.0000** | **1.2338** | **1.2338** | **4.0000e-005** | **0.0000** | **1.2349** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.3700e-003 | 0.0600 | 0.0708 | 1.4000e-004 | | 2.5800e-003 | 2.5800e-003 | | 2.4700e-003 | 2.4700e-003 | 0.0000 | 11.9122 | 11.9122 | 1.8300e-003 | 0.0000 | 11.9579 |
| **Total** | **6.3700e-003** | **0.0600** | **0.0708** | **1.4000e-004** | | **2.5800e-003** | **2.5800e-003** | | **2.4700e-003** | **2.4700e-003** | **0.0000** | **11.9122** | **11.9122** | **1.8300e-003** | **0.0000** | **11.9579** |

**<u>Mitigated Construction Off-Site</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 6.0000e-005 | 2.2900e-003 | 6.0000e-004 | 1.0000e-005 | 1.6000e-004 | 0.0000 | 1.7000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.6236 | 0.6236 | 2.0000e-005 | 0.0000 | 0.6242 |
| Worker | 3.2000e-004 | 2.4000e-004 | 2.3700e-003 | 1.0000e-005 | 7.9000e-004 | 1.0000e-005 | 8.0000e-004 | 2.1000e-004 | 1.0000e-005 | 2.2000e-004 | 0.0000 | 0.6102 | 0.6102 | 2.0000e-005 | 0.0000 | 0.6107 |
| **Total** | **3.8000e-004** | **2.5300e-003** | **2.9700e-003** | **2.0000e-005** | **9.5000e-004** | **1.0000e-005** | **9.7000e-004** | **2.6000e-004** | **1.0000e-005** | **2.7000e-004** | **0.0000** | **1.2338** | **1.2338** | **4.0000e-005** | **0.0000** | **1.2349** |

## 3.8 Equipment installation - 2025

**<u>Unmitigated Construction On-Site</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.5500e-003 | 0.0240 | 0.0283 | 5.0000e-005 | | 1.0300e-003 | 1.0300e-003 | | 9.9000e-004 | 9.9000e-004 | 0.0000 | 4.7649 | 4.7649 | 7.3000e-004 | 0.0000 | 4.7832 |
| **Total** | **2.5500e-003** | **0.0240** | **0.0283** | **5.0000e-005** | | **1.0300e-003** | **1.0300e-003** | | **9.9000e-004** | **9.9000e-004** | **0.0000** | **4.7649** | **4.7649** | **7.3000e-004** | **0.0000** | **4.7832** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 9.2000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2495 | 0.2495 | 1.0000e-005 | 0.0000 | 0.2497 |
| Worker | 1.3000e-004 | 1.0000e-004 | 9.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2441 | 0.2441 | 1.0000e-005 | 0.0000 | 0.2443 |
| **Total** | **1.5000e-004** | **1.0200e-003** | **1.1900e-003** | **0.0000** | **3.9000e-004** | **0.0000** | **3.9000e-004** | **1.0000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **0.4935** | **0.4935** | **2.0000e-005** | **0.0000** | **0.4939** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.5500e-003 | 0.0240 | 0.0283 | 5.0000e-005 | | 1.0300e-003 | 1.0300e-003 | | 9.9000e-004 | 9.9000e-004 | 0.0000 | 4.7649 | 4.7649 | 7.3000e-004 | 0.0000 | 4.7832 |
| **Total** | **2.5500e-003** | **0.0240** | **0.0283** | **5.0000e-005** | | **1.0300e-003** | **1.0300e-003** | | **9.9000e-004** | **9.9000e-004** | **0.0000** | **4.7649** | **4.7649** | **7.3000e-004** | **0.0000** | **4.7832** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 9.2000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2495 | 0.2495 | 1.0000e-005 | 0.0000 | 0.2497 |
| Worker | 1.3000e-004 | 1.0000e-004 | 9.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2441 | 0.2441 | 1.0000e-005 | 0.0000 | 0.2443 |
| **Total** | **1.5000e-004** | **1.0200e-003** | **1.1900e-003** | **0.0000** | **3.9000e-004** | **0.0000** | **3.9000e-004** | **1.0000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **0.4935** | **0.4935** | **2.0000e-005** | **0.0000** | **0.4939** |

## 3.9 Wellhead slab - 2025

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 3.8200e-003 | 0.0360 | 0.0425 | 8.0000e-005 | | 1.5500e-003 | 1.5500e-003 | | 1.4800e-003 | 1.4800e-003 | 0.0000 | 7.1473 | 7.1473 | 1.1000e-003 | 0.0000 | 7.1748 |
| **Total** | **3.8200e-003** | **0.0360** | **0.0425** | **8.0000e-005** | | **1.5500e-003** | **1.5500e-003** | | **1.4800e-003** | **1.4800e-003** | **0.0000** | **7.1473** | **7.1473** | **1.1000e-003** | **0.0000** | **7.1748** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.0000e-005 | 1.3700e-003 | 3.6000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.3742 | 0.3742 | 1.0000e-005 | 0.0000 | 0.3745 |
| Worker | 1.9000e-004 | 1.5000e-004 | 1.4200e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3661 | 0.3661 | 1.0000e-005 | 0.0000 | 0.3664 |

| Total | 2.2000e-004 | 1.5200e-003 | 1.7800e-003 | 0.0000 | 5.7000e-004 | 0.0000 | 5.8000e-004 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 0.7403 | 0.7403 | 2.0000e-005 | 0.0000 | 0.7409 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 3.8200e-003 | 0.0360 | 0.0425 | 8.0000e-005 | | 1.5500e-003 | 1.5500e-003 | | 1.4800e-003 | 1.4800e-003 | 0.0000 | 7.1473 | 7.1473 | 1.1000e-003 | 0.0000 | 7.1748 |
| **Total** | **3.8200e-003** | **0.0360** | **0.0425** | **8.0000e-005** | | **1.5500e-003** | **1.5500e-003** | | **1.4800e-003** | **1.4800e-003** | **0.0000** | **7.1473** | **7.1473** | **1.1000e-003** | **0.0000** | **7.1748** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.0000e-005 | 1.3700e-003 | 3.6000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.3742 | 0.3742 | 1.0000e-005 | 0.0000 | 0.3745 |
| Worker | 1.9000e-004 | 1.5000e-004 | 1.4200e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3661 | 0.3661 | 1.0000e-005 | 0.0000 | 0.3664 |
| **Total** | **2.2000e-004** | **1.5200e-003** | **1.7800e-003** | **0.0000** | **5.7000e-004** | **0.0000** | **5.8000e-004** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **0.7403** | **0.7403** | **2.0000e-005** | **0.0000** | **0.7409** |

## 3.10 Filters - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 3.8200e-003 | 0.0360 | 0.0425 | 8.0000e-005 | | 1.5500e-003 | 1.5500e-003 | | 1.4800e-003 | 1.4800e-003 | 0.0000 | 7.1473 | 7.1473 | 1.1000e-003 | 0.0000 | 7.1748 |
| **Total** | **3.8200e-003** | **0.0360** | **0.0425** | **8.0000e-005** | | **1.5500e-003** | **1.5500e-003** | | **1.4800e-003** | **1.4800e-003** | **0.0000** | **7.1473** | **7.1473** | **1.1000e-003** | **0.0000** | **7.1748** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.0000e-005 | 1.3700e-003 | 3.6000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.3742 | 0.3742 | 1.0000e-005 | 0.0000 | 0.3745 |
| Worker | 1.9000e-004 | 1.5000e-004 | 1.4200e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3661 | 0.3661 | 1.0000e-005 | 0.0000 | 0.3664 |
| **Total** | **2.2000e-004** | **1.5200e-003** | **1.7800e-003** | **0.0000** | **5.7000e-004** | **0.0000** | **5.8000e-004** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **0.7403** | **0.7403** | **2.0000e-005** | **0.0000** | **0.7409** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 3.8200e-003 | 0.0360 | 0.0425 | 8.0000e-005 | | 1.5500e-003 | 1.5500e-003 | | 1.4800e-003 | 1.4800e-003 | 0.0000 | 7.1473 | 7.1473 | 1.1000e-003 | 0.0000 | 7.1748 |
| **Total** | **3.8200e-003** | **0.0360** | **0.0425** | **8.0000e-005** | | **1.5500e-003** | **1.5500e-003** | | **1.4800e-003** | **1.4800e-003** | **0.0000** | **7.1473** | **7.1473** | **1.1000e-003** | **0.0000** | **7.1748** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.0000e-005 | 1.3700e-003 | 3.6000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.3742 | 0.3742 | 1.0000e-005 | 0.0000 | 0.3745 |
| Worker | 1.9000e-004 | 1.5000e-004 | 1.4200e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3661 | 0.3661 | 1.0000e-005 | 0.0000 | 0.3664 |
| **Total** | **2.2000e-004** | **1.5200e-003** | **1.7800e-003** | **0.0000** | **5.7000e-004** | **0.0000** | **5.8000e-004** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **0.7403** | **0.7403** | **2.0000e-005** | **0.0000** | **0.7409** |

## 3.11 MCC installation - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.5500e-003 | 0.0240 | 0.0283 | 5.0000e-005 | | 1.0300e-003 | 1.0300e-003 | | 9.9000e-004 | 9.9000e-004 | 0.0000 | 4.7649 | 4.7649 | 7.3000e-004 | 0.0000 | 4.7832 |
| **Total** | **2.5500e-003** | **0.0240** | **0.0283** | **5.0000e-005** | | **1.0300e-003** | **1.0300e-003** | | **9.9000e-004** | **9.9000e-004** | **0.0000** | **4.7649** | **4.7649** | **7.3000e-004** | **0.0000** | **4.7832** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 9.2000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2495 | 0.2495 | 1.0000e-005 | 0.0000 | 0.2497 |
| Worker | 1.3000e-004 | 1.0000e-004 | 9.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2441 | 0.2441 | 1.0000e-005 | 0.0000 | 0.2443 |
| **Total** | **1.5000e-004** | **1.0200e-003** | **1.1900e-003** | **0.0000** | **3.9000e-004** | **0.0000** | **3.9000e-004** | **1.0000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **0.4935** | **0.4935** | **2.0000e-005** | **0.0000** | **0.4939** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.5500e-003 | 0.0240 | 0.0283 | 5.0000e-005 | | 1.0300e-003 | 1.0300e-003 | | 9.9000e-004 | 9.9000e-004 | 0.0000 | 4.7649 | 4.7649 | 7.3000e-004 | 0.0000 | 4.7832 |
| **Total** | **2.5500e-003** | **0.0240** | **0.0283** | **5.0000e-005** | | **1.0300e-003** | **1.0300e-003** | | **9.9000e-004** | **9.9000e-004** | **0.0000** | **4.7649** | **4.7649** | **7.3000e-004** | **0.0000** | **4.7832** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 9.2000e-004 | 2.4000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2495 | 0.2495 | 1.0000e-005 | 0.0000 | 0.2497 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 1.3000e-004 | 1.0000e-004 | 9.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2441 | 0.2441 | 1.0000e-005 | 0.0000 | 0.2443 |
| **Total** | **1.5000e-004** | **1.0200e-003** | **1.1900e-003** | **0.0000** | **3.9000e-004** | **0.0000** | **3.9000e-004** | **1.0000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **0.4935** | **0.4935** | **2.0000e-005** | **0.0000** | **0.4939** |

## 3.12 Facility startup and testing - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.2700e-003 | 0.0120 | 0.0142 | 3.0000e-005 | | 5.2000e-004 | 5.2000e-004 | | 4.9000e-004 | 4.9000e-004 | 0.0000 | 2.3825 | 2.3825 | 3.7000e-004 | 0.0000 | 2.3916 |
| **Total** | **1.2700e-003** | **0.0120** | **0.0142** | **3.0000e-005** | | **5.2000e-004** | **5.2000e-004** | | **4.9000e-004** | **4.9000e-004** | **0.0000** | **2.3825** | **2.3825** | **3.7000e-004** | **0.0000** | **2.3916** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1247 | 0.1247 | 0.0000 | 0.0000 | 0.1248 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0915 | 0.0915 | 0.0000 | 0.0000 | 0.0916 |
| **Total** | **6.0000e-005** | **5.0000e-004** | **4.8000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2163** | **0.2163** | **0.0000** | **0.0000** | **0.2164** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.2700e-003 | 0.0120 | 0.0142 | 3.0000e-005 | | 5.2000e-004 | 5.2000e-004 | | 4.9000e-004 | 4.9000e-004 | 0.0000 | 2.3824 | 2.3824 | 3.7000e-004 | 0.0000 | 2.3916 |
| **Total** | **1.2700e-003** | **0.0120** | **0.0142** | **3.0000e-005** | | **5.2000e-004** | **5.2000e-004** | | **4.9000e-004** | **4.9000e-004** | **0.0000** | **2.3824** | **2.3824** | **3.7000e-004** | **0.0000** | **2.3916** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1247 | 0.1247 | 0.0000 | 0.0000 | 0.1248 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0915 | 0.0915 | 0.0000 | 0.0000 | 0.0916 |
| **Total** | **6.0000e-005** | **5.0000e-004** | **4.8000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2163** | **0.2163** | **0.0000** | **0.0000** | **0.2164** |

## 3.13 Architectural coatings - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0105 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 4.3000e-004 | 2.8600e-003 | 4.5200e-003 | 1.0000e-005 | | 1.3000e-004 | 1.3000e-004 | | 1.3000e-004 | 1.3000e-004 | 0.0000 | 0.6383 | 0.6383 | 3.0000e-005 | 0.0000 | 0.6392 |
| **Total** | **0.0110** | **2.8600e-003** | **4.5200e-003** | **1.0000e-005** | | **1.3000e-004** | **1.3000e-004** | | **1.3000e-004** | **1.3000e-004** | **0.0000** | **0.6383** | **0.6383** | **3.0000e-005** | **0.0000** | **0.6392** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.0000e-005 | 1.0000e-005 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0153 | 0.0153 | 0.0000 | 0.0000 | 0.0153 |
| **Total** | **1.0000e-005** | **1.0000e-005** | **6.0000e-005** | **0.0000** | **2.0000e-005** | **0.0000** | **2.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0153** | **0.0153** | **0.0000** | **0.0000** | **0.0153** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0105 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 4.3000e-004 | 2.8600e-003 | 4.5200e-003 | 1.0000e-005 | | 1.3000e-004 | 1.3000e-004 | | 1.3000e-004 | 1.3000e-004 | 0.0000 | 0.6383 | 0.6383 | 3.0000e-005 | 0.0000 | 0.6392 |
| **Total** | **0.0110** | **2.8600e-003** | **4.5200e-003** | **1.0000e-005** | | **1.3000e-004** | **1.3000e-004** | | **1.3000e-004** | **1.3000e-004** | **0.0000** | **0.6383** | **0.6383** | **3.0000e-005** | **0.0000** | **0.6392** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.0000e-005 | 1.0000e-005 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0153 | 0.0153 | 0.0000 | 0.0000 | 0.0153 |
| **Total** | **1.0000e-005** | **1.0000e-005** | **6.0000e-005** | **0.0000** | **2.0000e-005** | **0.0000** | **2.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0153** | **0.0153** | **0.0000** | **0.0000** | **0.0153** |

## 3.14 Demobilization - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.8400e-003 | 0.0181 | 0.0253 | 4.0000e-005 | | 8.1000e-004 | 8.1000e-004 | | 7.5000e-004 | 7.5000e-004 | 0.0000 | 3.5907 | 3.5907 | 1.1600e-003 | 0.0000 | 3.6198 |
| **Total** | **1.8400e-003** | **0.0181** | **0.0253** | **4.0000e-005** | | **8.1000e-004** | **8.1000e-004** | | **7.5000e-004** | **7.5000e-004** | **0.0000** | **3.5907** | **3.5907** | **1.1600e-003** | **0.0000** | **3.6198** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 1.0000e-005 | 4.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1247 | 0.1247 | 0.0000 | 0.0000 | 0.1248 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0915 | 0.0915 | 0.0000 | 0.0000 | 0.0916 |
| **Total** | **6.0000e-005** | **5.0000e-004** | **4.8000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2163** | **0.2163** | **0.0000** | **0.0000** | **0.2164** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.8400e-003 | 0.0181 | 0.0253 | 4.0000e-005 | | 8.1000e-004 | 8.1000e-004 | | 7.5000e-004 | 7.5000e-004 | 0.0000 | 3.5907 | 3.5907 | 1.1600e-003 | 0.0000 | 3.6198 |
| **Total** | **1.8400e-003** | **0.0181** | **0.0253** | **4.0000e-005** | | **8.1000e-004** | **8.1000e-004** | | **7.5000e-004** | **7.5000e-004** | **0.0000** | **3.5907** | **3.5907** | **1.1600e-003** | **0.0000** | **3.6198** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1247 | 0.1247 | 0.0000 | 0.0000 | 0.1248 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0915 | 0.0915 | 0.0000 | 0.0000 | 0.0916 |
| **Total** | **6.0000e-005** | **5.0000e-004** | **4.8000e-004** | **0.0000** | **1.5000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.2163** | **0.2163** | **0.0000** | **0.0000** | **0.2164** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.590151 | 0.025976 | 0.205990 | 0.112108 | 0.016651 | 0.004427 | 0.021270 | 0.012848 | 0.001229 | 0.002212 | 0.005302 | 0.000981 | 0.000854 |
| Other Asphalt Surfaces | 0.590151 | 0.025976 | 0.205990 | 0.112108 | 0.016651 | 0.004427 | 0.021270 | 0.012848 | 0.001229 | 0.002212 | 0.005302 | 0.000981 | 0.000854 |

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| Land Use | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| Land Use | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Total | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|---|---|---|---|---|---|

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 5.4700e-003 | 0.0000 | 2.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.0000e-005 | 4.0000e-005 | 0.0000 | 0.0000 | 4.0000e-005 |
| Unmitigated | 5.4700e-003 | 0.0000 | 2.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.0000e-005 | 4.0000e-005 | 0.0000 | 0.0000 | 4.0000e-005 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 7.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 5.4000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 2.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.0000e-005 | 4.0000e-005 | 0.0000 | 0.0000 | 4.0000e-005 |
| **Total** | **5.4700e-003** | **0.0000** | **2.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **4.0000e-005** | **4.0000e-005** | **0.0000** | **0.0000** | **4.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 7.0000e-005 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 5.4000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 2.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.0000e-005 | 4.0000e-005 | 0.0000 | 0.0000 | 4.0000e-005 |
| **Total** | **5.4700e-003** | **0.0000** | **2.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **4.0000e-005** | **4.0000e-005** | **0.0000** | **0.0000** | **4.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |

| | | | | |
|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

### Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

### Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

### User Defined Equipment

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - ASR Treatment Facility Construction
**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 1.23 | 1000sqft | 0.03 | 1,225.00 | 0 |
| Other Asphalt Surfaces | 0.22 | Acre | 0.22 | 9,583.20 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2026 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - ASR Treatment Faciity Construction

Land Use - Surrogate land uses for ASR facilities

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - 100 CY of material assumed to be exported and 2.5 acres assumed to be total disturbed based on model default and multiple passes with the grader

Trips and VMT - Construction vehicle information based on City input

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

Architectural Coating - Default coating EF

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 613 | 50 |
| tblAreaCoating | Area_Nonresidential_Interior | 1838 | 150 |
| tblAreaCoating | Area_Parking | 575 | 0 |
| tblConstructionPhase | NumDays | 2.00 | 10.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 20.00 |
| tblConstructionPhase | NumDays | 100.00 | 30.00 |
| tblConstructionPhase | NumDays | 100.00 | 25.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 1/10/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 4/4/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 5/16/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 6/20/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 7/4/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 7/25/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 8/15/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 8/29/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 9/5/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 9/12/2025 |

| | | | |
|---|---|---|---|
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 3/10/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 4/7/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 5/19/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 6/23/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 7/6/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 7/28/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 8/18/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 9/1/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 9/8/2025 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 5.00 | 2.50 |
| tblGrading | MaterialExported | 0.00 | 100.00 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.20 | 0.20 |
| tblOffRoadEquipment | LoadFactor | 0.37 | 0.37 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblSolidWaste | SolidWasteGenerationRate | 1.53 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 284,437.50 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2025 | 4.9151 | 15.4969 | 23.5176 | 0.0401 | 0.6722 | 0.5984 | 1.2171 | 0.0955 | 0.5855 | 0.6068 | 0.0000 | 3,775.8780 | 3,775.8780 | 0.9212 | 0.0000 | 3,786.2818 |
| **Maximum** | **4.9151** | **15.4969** | **23.5176** | **0.0401** | **0.6722** | **0.5984** | **1.2171** | **0.0955** | **0.5855** | **0.6068** | **0.0000** | **3,775.8780** | **3,775.8780** | **0.9212** | **0.0000** | **3,786.2818** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2025 | 4.9151 | 15.4969 | 23.5176 | 0.0401 | 0.3806 | 0.5984 | 0.9255 | 0.0640 | 0.5855 | 0.6068 | 0.0000 | 3,775.8780 | 3,775.8780 | 0.9212 | 0.0000 | 3,786.2818 |
| **Maximum** | **4.9151** | **15.4969** | **23.5176** | **0.0401** | **0.3806** | **0.5984** | **0.9255** | **0.0640** | **0.5855** | **0.6068** | **0.0000** | **3,775.8780** | **3,775.8780** | **0.9212** | **0.0000** | **3,786.2818** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **43.38** | **0.00** | **23.96** | **32.97** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | **0.0000** | **3.4000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | **0.0000** | **3.4000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 1/6/2025 | 1/10/2025 | 5 | 5 | |
| 2 | Earthwork and Compaction | Grading | 1/13/2025 | 1/24/2025 | 5 | 10 | |
| 3 | Subgrade pipeline and electrical | Trenching | 1/27/2025 | 3/7/2025 | 5 | 30 | |
| 4 | Foundations and slabs | Building Construction | 3/10/2025 | 4/4/2025 | 5 | 20 | |
| 5 | Building construction | Building Construction | 4/7/2025 | 5/16/2025 | 5 | 30 | |
| 6 | Tank construction | Building Construction | 5/19/2025 | 6/20/2025 | 5 | 25 | |
| 7 | Equipment installation | Building Construction | 6/23/2025 | 7/4/2025 | 5 | 10 | |
| 8 | Wellhead slab | Building Construction | 7/6/2025 | 7/25/2025 | 5 | 15 | |
| 9 | Filters | Building Construction | 7/28/2025 | 8/15/2025 | 5 | 15 | |
| 10 | MCC installation | Building Construction | 8/18/2025 | 8/29/2025 | 5 | 10 | |
| 11 | Facility startup and testing | Building Construction | 9/1/2025 | 9/5/2025 | 5 | 5 | |
| 12 | Architectural coatings | Architectural Coating | 9/1/2025 | 9/5/2025 | 5 | 5 | |
| 13 | Demobilization | Building Construction | 9/8/2025 | 9/12/2025 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.22**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,838; Non-Residential Outdoor: 613; Striped Parking Area: 575**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Tank construction | Cranes | 1 | 4.00 | 231 | 0.29 |
| Equipment installation | Cranes | 1 | 4.00 | 231 | 0.29 |
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Wellhead slab | Cranes | 1 | 4.00 | 231 | 0.29 |
| Filters | Cranes | 1 | 4.00 | 231 | 0.29 |
| MCC installation | Cranes | 1 | 4.00 | 231 | 0.29 |
| Foundations and slabs | Cranes | 0 | 0.00 | 231 | 0.29 |
| Foundations and slabs | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Foundations and slabs | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Earthwork and Compaction | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Tank construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Equipment installation | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead slab | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Filters | Forklifts | 1 | 8.00 | 89 | 0.20 |
| MCC installation | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Earthwork and Compaction | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Tank construction | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Equipment installation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Wellhead slab | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

| | | | | | |
|---|---|---|---|---|---|
| Filters | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| MCC installation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Earthwork and Compaction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Earthwork and Compaction | Graders | 1 | 8.00 | 187 | 0.41 |
| Building construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building construction | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Tank construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Equipment installation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead slab | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Architectural coatings | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Filters | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| MCC installation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Facility startup and testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Subgrade pipeline and electrical | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Subgrade pipeline and electrical | Excavators | 1 | 8.00 | 158 | 0.38 |
| Subgrade pipeline and electrical | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Subgrade pipeline and electrical | Pumps | 1 | 8.00 | 84 | 0.74 |
| Subgrade pipeline and electrical | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Foundations and slabs | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Foundations and slabs | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Foundations and slabs | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Foundations and slabs | Welders | 1 | 8.00 | 46 | 0.45 |
| Building construction | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Building construction | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Foundations and slabs | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Equipment installation | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead slab | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Mobilization | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Filters | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| MCC installation | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Earthwork and Compaction | 3 | 8.00 | 2.00 | 8.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Subgrade pipeline and electrical | 5 | 8.00 | 4.00 | 6.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural coatings | 1 | 1.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.5303 | 0.0000 | 0.5303 | 0.0573 | 0.0000 | 0.0573 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.5303** | **0.2194** | **0.7497** | **0.0573** | **0.2019** | **0.2591** | | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.2386 | 0.0000 | 0.2386 | 0.0258 | 0.0000 | 0.0258 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | 0.0000 | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.2386** | **0.2194** | **0.4581** | **0.0258** | **0.2019** | **0.2277** | **0.0000** | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## 3.3 Earthwork and Compaction - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.2660 | 0.0000 | 0.2660 | 0.0288 | 0.0000 | 0.0288 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.2660** | **0.2194** | **0.4854** | **0.0288** | **0.2019** | **0.2307** | | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 4.1600e-003 | 0.1627 | 0.0473 | 6.1000e-004 | 0.0139 | 4.5000e-004 | 0.0143 | 3.7900e-003 | 4.3000e-004 | 4.2200e-003 | | 65.5337 | 65.5337 | 2.5800e-003 | | 65.5981 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |

| Total | 0.0342 | 0.3615 | 0.2891 | 1.7000e-003 | 0.0931 | 1.2600e-003 | 0.0943 | 0.0251 | 1.1800e-003 | 0.0263 | | 177.4612 | 177.4612 | 6.1300e-003 | | 177.6145 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.1197 | 0.0000 | 0.1197 | 0.0129 | 0.0000 | 0.0129 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | 0.0000 | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.1197** | **0.2194** | **0.3391** | **0.0129** | **0.2019** | **0.2148** | **0.0000** | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 4.1600e-003 | 0.1627 | 0.0473 | 6.1000e-004 | 0.0139 | 4.5000e-004 | 0.0143 | 3.7900e-003 | 4.3000e-004 | 4.2200e-003 | | 65.5337 | 65.5337 | 2.5800e-003 | | 65.5981 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0342** | **0.3615** | **0.2891** | **1.7000e-003** | **0.0931** | **1.2600e-003** | **0.0943** | **0.0251** | **1.1800e-003** | **0.0263** | | **177.4612** | **177.4612** | **6.1300e-003** | | **177.6145** |

# 3.4 Subgrade pipeline and electrical - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9681 | 8.0755 | 13.9960 | 0.0227 | | 0.3518 | 0.3518 | | 0.3391 | 0.3391 | | 2,168.1421 | 2,168.1421 | 0.3593 | | 2,177.1253 |
| **Total** | **0.9681** | **8.0755** | **13.9960** | **0.0227** | | **0.3518** | **0.3518** | | **0.3391** | **0.3391** | | **2,168.1421** | **2,168.1421** | **0.3593** | | **2,177.1253** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.0400e-003 | 0.0407 | 0.0118 | 1.5000e-004 | 3.4700e-003 | 1.1000e-004 | 3.5800e-003 | 9.5000e-004 | 1.1000e-004 | 1.0600e-003 | | 16.3834 | 16.3834 | 6.4000e-004 | | 16.3995 |
| Vendor | 9.0800e-003 | 0.3634 | 0.0902 | 1.0500e-003 | 0.0270 | 6.5000e-004 | 0.0276 | 7.7600e-003 | 6.2000e-004 | 8.3800e-003 | | 110.9994 | 110.9994 | 3.7700e-003 | | 111.0937 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0356** | **0.4212** | **0.2987** | **1.7700e-003** | **0.0962** | **1.2400e-003** | **0.0974** | **0.0261** | **1.1700e-003** | **0.0273** | | **183.8107** | **183.8107** | **6.0800e-003** | | **183.9628** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9681 | 8.0755 | 13.9960 | 0.0227 | | 0.3518 | 0.3518 | | 0.3391 | 0.3391 | 0.0000 | 2,168.1421 | 2,168.1421 | 0.3593 | | 2,177.1253 |
| **Total** | **0.9681** | **8.0755** | **13.9960** | **0.0227** | | **0.3518** | **0.3518** | | **0.3391** | **0.3391** | **0.0000** | **2,168.1421** | **2,168.1421** | **0.3593** | | **2,177.1253** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.0400e-003 | 0.0407 | 0.0118 | 1.5000e-004 | 3.4700e-003 | 1.1000e-004 | 3.5800e-003 | 9.5000e-004 | 1.1000e-004 | 1.0600e-003 | | 16.3834 | 16.3834 | 6.4000e-004 | | 16.3995 |
| Vendor | 9.0800e-003 | 0.3634 | 0.0902 | 1.0500e-003 | 0.0270 | 6.5000e-004 | 0.0276 | 7.7600e-003 | 6.2000e-004 | 8.3800e-003 | | 110.9994 | 110.9994 | 3.7700e-003 | | 111.0937 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0356** | **0.4212** | **0.2987** | **1.7700e-003** | **0.0962** | **1.2400e-003** | **0.0974** | **0.0261** | **1.1700e-003** | **0.0273** | | **183.8107** | **183.8107** | **6.0800e-003** | | **183.9628** |

## 3.5 Foundations and slabs - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | 0.0000 | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | **0.0000** | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## 3.6 Building construction - 2025

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | 0.0000 | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | **0.0000** | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## 3.7 Tank construction - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## 3.8 Equipment installation - 2025

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## 3.9 Wellhead slab - 2025

## Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## 3.10 Filters - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## 3.11 MCC installation - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0255 | 0.0171 | 0.1967 | 5.7000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 56.4279 | 56.4279 | 1.6700e-003 | | 56.4696 |
| **Total** | **0.0301** | **0.1988** | **0.2418** | **1.0900e-003** | **0.0792** | **8.1000e-004** | **0.0800** | **0.0213** | **7.5000e-004** | **0.0221** | | **111.9276** | **111.9276** | **3.5500e-003** | | **112.0164** |

# 3.12 Facility startup and testing - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0191 | 0.0128 | 0.1476 | 4.2000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 42.3209 | 42.3209 | 1.2500e-003 | | 42.3522 |
| **Total** | **0.0237** | **0.1945** | **0.1926** | **9.4000e-004** | **0.0628** | **6.9000e-004** | **0.0635** | **0.0170** | **6.4000e-004** | **0.0176** | | **97.8206** | **97.8206** | **3.1300e-003** | | **97.8990** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0191 | 0.0128 | 0.1476 | 4.2000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 42.3209 | 42.3209 | 1.2500e-003 | | 42.3522 |
| **Total** | **0.0237** | **0.1945** | **0.1926** | **9.4000e-004** | **0.0628** | **6.9000e-004** | **0.0635** | **0.0170** | **6.4000e-004** | **0.0176** | | **97.8206** | **97.8206** | **3.1300e-003** | | **97.8990** |

## 3.13 Architectural coatings - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 4.2077 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1709 | 1.1455 | 1.8091 | 2.9700e-003 | | 0.0515 | 0.0515 | | 0.0515 | 0.0515 | | 281.4481 | 281.4481 | 0.0154 | | 281.8319 |
| **Total** | **4.3785** | **1.1455** | **1.8091** | **2.9700e-003** | | **0.0515** | **0.0515** | | **0.0515** | **0.0515** | | **281.4481** | **281.4481** | **0.0154** | | **281.8319** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 3.1900e-003 | 2.1300e-003 | 0.0246 | 7.0000e-005 | 8.2100e-003 | 6.0000e-005 | 8.2700e-003 | 2.1800e-003 | 5.0000e-005 | 2.2300e-003 | | 7.0535 | 7.0535 | 2.1000e-004 | | 7.0587 |
| **Total** | **3.1900e-003** | **2.1300e-003** | **0.0246** | **7.0000e-005** | **8.2100e-003** | **6.0000e-005** | **8.2700e-003** | **2.1800e-003** | **5.0000e-005** | **2.2300e-003** | | **7.0535** | **7.0535** | **2.1000e-004** | | **7.0587** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 4.2077 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1709 | 1.1455 | 1.8091 | 2.9700e-003 | | 0.0515 | 0.0515 | | 0.0515 | 0.0515 | 0.0000 | 281.4481 | 281.4481 | 0.0154 | | 281.8319 |
| **Total** | **4.3785** | **1.1455** | **1.8091** | **2.9700e-003** | | **0.0515** | **0.0515** | | **0.0515** | **0.0515** | **0.0000** | **281.4481** | **281.4481** | **0.0154** | | **281.8319** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 3.1900e-003 | 2.1300e-003 | 0.0246 | 7.0000e-005 | 8.2100e-003 | 6.0000e-005 | 8.2700e-003 | 2.1800e-003 | 5.0000e-005 | 2.2300e-003 | | 7.0535 | 7.0535 | 2.1000e-004 | | 7.0587 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **3.1900e-003** | **2.1300e-003** | **0.0246** | **7.0000e-005** | **8.2100e-003** | **6.0000e-005** | **8.2700e-003** | **2.1800e-003** | **5.0000e-005** | **2.2300e-003** | | **7.0535** | **7.0535** | **2.1000e-004** | | **7.0587** |

## 3.14 Demobilization - 2025

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7363 | 7.2181 | 10.1058 | 0.0164 | | 0.3240 | 0.3240 | | 0.2981 | 0.2981 | | 1,583.2419 | 1,583.2419 | 0.5121 | | 1,596.0433 |
| **Total** | **0.7363** | **7.2181** | **10.1058** | **0.0164** | | **0.3240** | **0.3240** | | **0.2981** | **0.2981** | | **1,583.2419** | **1,583.2419** | **0.5121** | | **1,596.0433** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0191 | 0.0128 | 0.1476 | 4.2000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 42.3209 | 42.3209 | 1.2500e-003 | | 42.3522 |
| **Total** | **0.0237** | **0.1945** | **0.1926** | **9.4000e-004** | **0.0628** | **6.9000e-004** | **0.0635** | **0.0170** | **6.4000e-004** | **0.0176** | | **97.8206** | **97.8206** | **3.1300e-003** | | **97.8990** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7363 | 7.2181 | 10.1058 | 0.0164 | | 0.3240 | 0.3240 | | 0.2981 | 0.2981 | 0.0000 | 1,583.2419 | 1,583.2419 | 0.5121 | | 1,596.0433 |
| **Total** | **0.7363** | **7.2181** | **10.1058** | **0.0164** | | **0.3240** | **0.3240** | | **0.2981** | **0.2981** | **0.0000** | **1,583.2419** | **1,583.2419** | **0.5121** | | **1,596.0433** |

**<u>Mitigated Construction Off-Site</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.5400e-003 | 0.1817 | 0.0451 | 5.2000e-004 | 0.0135 | 3.3000e-004 | 0.0138 | 3.8800e-003 | 3.1000e-004 | 4.1900e-003 | | 55.4997 | 55.4997 | 1.8800e-003 | | 55.5468 |
| Worker | 0.0191 | 0.0128 | 0.1476 | 4.2000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 42.3209 | 42.3209 | 1.2500e-003 | | 42.3522 |
| **Total** | **0.0237** | **0.1945** | **0.1926** | **9.4000e-004** | **0.0628** | **6.9000e-004** | **0.0635** | **0.0170** | **6.4000e-004** | **0.0176** | | **97.8206** | **97.8206** | **3.1300e-003** | | **97.8990** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.590151 | 0.025976 | 0.205990 | 0.112108 | 0.016651 | 0.004427 | 0.021270 | 0.012848 | 0.001229 | 0.002212 | 0.005302 | 0.000981 | 0.000854 |
| Other Asphalt Surfaces | 0.590151 | 0.025976 | 0.205990 | 0.112108 | 0.016651 | 0.004427 | 0.021270 | 0.012848 | 0.001229 | 0.002212 | 0.005302 | 0.000981 | 0.000854 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| Unmitigated | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 3.8000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0296 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | | **3.4000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 3.8000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0296 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | | **3.4000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - ASR Treatment Facility Construction
## Santa Cruz County, Winter

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 1.23 | 1000sqft | 0.03 | 1,225.00 | 0 |
| Other Asphalt Surfaces | 0.22 | Acre | 0.22 | 9,583.20 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2026 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - ASR Treatment Faciity Construction

Land Use - Surrogate land uses for ASR facilities

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - 100 CY of material assumed to be exported and 2.5 acres assumed to be total disturbed based on model default and multiple passes with the grader

Trips and VMT - Construction vehicle information based on City input

Vehicle Trips - Modeling construction only

Consumer Products - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

Architectural Coating - Default coating EF

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 613 | 50 |
| tblAreaCoating | Area_Nonresidential_Interior | 1838 | 150 |
| tblAreaCoating | Area_Parking | 575 | 0 |
| tblConstructionPhase | NumDays | 2.00 | 10.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 20.00 |
| tblConstructionPhase | NumDays | 100.00 | 30.00 |
| tblConstructionPhase | NumDays | 100.00 | 25.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 1/10/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 4/4/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 5/16/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 6/20/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 7/4/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 7/25/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 8/15/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 8/29/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 9/5/2025 |
| tblConstructionPhase | PhaseEndDate | 1/5/2025 | 9/12/2025 |

| | | | |
|---|---|---|---|
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 3/10/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 4/7/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 5/19/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 6/23/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 7/6/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 7/28/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 8/18/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 9/1/2025 |
| tblConstructionPhase | PhaseStartDate | 1/6/2025 | 9/8/2025 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 5.00 | 2.50 |
| tblGrading | MaterialExported | 0.00 | 100.00 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.20 | 0.20 |
| tblOffRoadEquipment | LoadFactor | 0.37 | 0.37 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rollers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Forklifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Tractors/Loaders/Backhoes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 2.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblSolidWaste | SolidWasteGenerationRate | 1.53 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 13.00 | 8.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 6.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 284,437.50 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2025 | 4.9183 | 15.5017 | 23.5237 | 0.0401 | 0.6722 | 0.5984 | 1.2172 | 0.0955 | 0.5855 | 0.6068 | 0.0000 | 3,772.0170 | 3,772.0170 | 0.9213 | 0.0000 | 3,782.4222 |
| **Maximum** | **4.9183** | **15.5017** | **23.5237** | **0.0401** | **0.6722** | **0.5984** | **1.2172** | **0.0955** | **0.5855** | **0.6068** | **0.0000** | **3,772.0170** | **3,772.0170** | **0.9213** | **0.0000** | **3,782.4222** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2025 | 4.9183 | 15.5017 | 23.5237 | 0.0401 | 0.3806 | 0.5984 | 0.9255 | 0.0640 | 0.5855 | 0.6068 | 0.0000 | 3,772.0170 | 3,772.0170 | 0.9213 | 0.0000 | 3,782.4222 |
| **Maximum** | **4.9183** | **15.5017** | **23.5237** | **0.0401** | **0.3806** | **0.5984** | **0.9255** | **0.0640** | **0.5855** | **0.6068** | **0.0000** | **3,772.0170** | **3,772.0170** | **0.9213** | **0.0000** | **3,782.4222** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **43.38** | **0.00** | **23.96** | **32.97** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | **0.0000** | **3.4000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | **0.0000** | **3.4000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Mobilization | Site Preparation | 1/6/2025 | 1/10/2025 | 5 | 5 | |
| 2 | Earthwork and Compaction | Grading | 1/13/2025 | 1/24/2025 | 5 | 10 | |
| 3 | Subgrade pipeline and electrical | Trenching | 1/27/2025 | 3/7/2025 | 5 | 30 | |
| 4 | Foundations and slabs | Building Construction | 3/10/2025 | 4/4/2025 | 5 | 20 | |
| 5 | Building construction | Building Construction | 4/7/2025 | 5/16/2025 | 5 | 30 | |
| 6 | Tank construction | Building Construction | 5/19/2025 | 6/20/2025 | 5 | 25 | |
| 7 | Equipment installation | Building Construction | 6/23/2025 | 7/4/2025 | 5 | 10 | |
| 8 | Wellhead slab | Building Construction | 7/6/2025 | 7/25/2025 | 5 | 15 | |
| 9 | Filters | Building Construction | 7/28/2025 | 8/15/2025 | 5 | 15 | |
| 10 | MCC installation | Building Construction | 8/18/2025 | 8/29/2025 | 5 | 10 | |
| 11 | Facility startup and testing | Building Construction | 9/1/2025 | 9/5/2025 | 5 | 5 | |
| 12 | Architectural coatings | Architectural Coating | 9/1/2025 | 9/5/2025 | 5 | 5 | |
| 13 | Demobilization | Building Construction | 9/8/2025 | 9/12/2025 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.22**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,838; Non-Residential Outdoor: 613; Striped Parking Area: 575**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Tank construction | Cranes | 1 | 4.00 | 231 | 0.29 |
| Equipment installation | Cranes | 1 | 4.00 | 231 | 0.29 |
| Mobilization | Graders | 1 | 8.00 | 187 | 0.41 |
| Mobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Wellhead slab | Cranes | 1 | 4.00 | 231 | 0.29 |
| Filters | Cranes | 1 | 4.00 | 231 | 0.29 |
| MCC installation | Cranes | 1 | 4.00 | 231 | 0.29 |
| Foundations and slabs | Cranes | 0 | 0.00 | 231 | 0.29 |
| Foundations and slabs | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Foundations and slabs | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Facility startup and testing | Cranes | 1 | 4.00 | 231 | 0.29 |
| Earthwork and Compaction | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demobilization | Cranes | 1 | 4.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Tank construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Equipment installation | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Wellhead slab | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Filters | Forklifts | 1 | 8.00 | 89 | 0.20 |
| MCC installation | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Facility startup and testing | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Earthwork and Compaction | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demobilization | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Tank construction | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Equipment installation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Wellhead slab | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

| | | | | | |
|---|---|---|---|---|---|
| Filters | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| MCC installation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Facility startup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Earthwork and Compaction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Demobilization | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Earthwork and Compaction | Graders | 1 | 8.00 | 187 | 0.41 |
| Building construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building construction | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Tank construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Equipment installation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Wellhead slab | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Demobilization | Pavers | 1 | 4.00 | 130 | 0.42 |
| Demobilization | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Demobilization | Rollers | 1 | 4.00 | 80 | 0.38 |
| Architectural coatings | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Filters | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| MCC installation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Facility startup and testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Subgrade pipeline and electrical | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Subgrade pipeline and electrical | Excavators | 1 | 8.00 | 158 | 0.38 |
| Subgrade pipeline and electrical | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Subgrade pipeline and electrical | Pumps | 1 | 8.00 | 84 | 0.74 |
| Subgrade pipeline and electrical | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Foundations and slabs | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Foundations and slabs | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Foundations and slabs | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Foundations and slabs | Welders | 1 | 8.00 | 46 | 0.45 |
| Building construction | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Building construction | Welders | 1 | 8.00 | 46 | 0.45 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Foundations and slabs | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Tank construction | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Equipment installation | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Wellhead slab | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Mobilization | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Filters | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| MCC installation | 3 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Facility startup and testing | 3 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Earthwork and Compaction | 3 | 8.00 | 2.00 | 8.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demobilization | 7 | 6.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Subgrade pipeline and electrical | 5 | 8.00 | 4.00 | 6.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural coatings | 1 | 1.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Mobilization - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.5303 | 0.0000 | 0.5303 | 0.0573 | 0.0000 | 0.0573 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.5303** | **0.2194** | **0.7497** | **0.0573** | **0.2019** | **0.2591** | | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.2386 | 0.0000 | 0.2386 | 0.0258 | 0.0000 | 0.0258 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | 0.0000 | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.2386** | **0.2194** | **0.4581** | **0.0258** | **0.2019** | **0.2277** | **0.0000** | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## 3.3 Earthwork and Compaction - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.2660 | 0.0000 | 0.2660 | 0.0288 | 0.0000 | 0.0288 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.2660** | **0.2194** | **0.4854** | **0.0288** | **0.2019** | **0.2307** | | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 4.2700e-003 | 0.1651 | 0.0495 | 6.0000e-004 | 0.0139 | 4.7000e-004 | 0.0143 | 3.7900e-003 | 4.5000e-004 | 4.2300e-003 | | 64.6186 | 64.6186 | 2.6600e-003 | | 64.6851 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0379** | **0.3687** | **0.2974** | **1.6500e-003** | **0.0931** | **1.3000e-003** | **0.0944** | **0.0251** | **1.2200e-003** | **0.0263** | | **172.6852** | **172.6852** | **6.2700e-003** | | **172.8419** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.1197 | 0.0000 | 0.1197 | 0.0129 | 0.0000 | 0.0129 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.5754 | 6.1269 | 6.0534 | 0.0129 | | 0.2194 | 0.2194 | | 0.2019 | 0.2019 | 0.0000 | 1,244.3513 | 1,244.3513 | 0.4025 | | 1,254.4125 |
| **Total** | **0.5754** | **6.1269** | **6.0534** | **0.0129** | **0.1197** | **0.2194** | **0.3391** | **0.0129** | **0.2019** | **0.2148** | **0.0000** | **1,244.3513** | **1,244.3513** | **0.4025** | | **1,254.4125** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 4.2700e-003 | 0.1651 | 0.0495 | 6.0000e-004 | 0.0139 | 4.7000e-004 | 0.0143 | 3.7900e-003 | 4.5000e-004 | 4.2300e-003 | | 64.6186 | 64.6186 | 2.6600e-003 | | 64.6851 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0379** | **0.3687** | **0.2974** | **1.6500e-003** | **0.0931** | **1.3000e-003** | **0.0944** | **0.0251** | **1.2200e-003** | **0.0263** | | **172.6852** | **172.6852** | **6.2700e-003** | | **172.8419** |

## 3.4 Subgrade pipeline and electrical - 2025

## Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9681 | 8.0755 | 13.9960 | 0.0227 | | 0.3518 | 0.3518 | | 0.3391 | 0.3391 | | 2,168.1421 | 2,168.1421 | 0.3593 | | 2,177.1253 |
| **Total** | **0.9681** | **8.0755** | **13.9960** | **0.0227** | | **0.3518** | **0.3518** | | **0.3391** | **0.3391** | | **2,168.1421** | **2,168.1421** | **0.3593** | | **2,177.1253** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.0700e-003 | 0.0413 | 0.0124 | 1.5000e-004 | 3.4700e-003 | 1.2000e-004 | 3.5800e-003 | 9.5000e-004 | 1.1000e-004 | 1.0600e-003 | | 16.1547 | 16.1547 | 6.6000e-004 | | 16.1713 |
| Vendor | 9.6700e-003 | 0.3647 | 0.1017 | 1.0200e-003 | 0.0270 | 6.9000e-004 | 0.0277 | 7.7600e-003 | 6.6000e-004 | 8.4200e-003 | | 108.6023 | 108.6023 | 4.0200e-003 | | 108.7027 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0396** | **0.4272** | **0.3111** | **1.7100e-003** | **0.0962** | **1.2900e-003** | **0.0974** | **0.0261** | **1.2100e-003** | **0.0274** | | **178.5224** | **178.5224** | **6.2800e-003** | | **178.6794** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.9681 | 8.0755 | 13.9960 | 0.0227 | | 0.3518 | 0.3518 | | 0.3391 | 0.3391 | 0.0000 | 2,168.1421 | 2,168.1421 | 0.3593 | | 2,177.1253 |
| **Total** | **0.9681** | **8.0755** | **13.9960** | **0.0227** | | **0.3518** | **0.3518** | | **0.3391** | **0.3391** | **0.0000** | **2,168.1421** | **2,168.1421** | **0.3593** | | **2,177.1253** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.0700e-003 | 0.0413 | 0.0124 | 1.5000e-004 | 3.4700e-003 | 1.2000e-004 | 3.5800e-003 | 9.5000e-004 | 1.1000e-004 | 1.0600e-003 | | 16.1547 | 16.1547 | 6.6000e-004 | | 16.1713 |
| Vendor | 9.6700e-003 | 0.3647 | 0.1017 | 1.0200e-003 | 0.0270 | 6.9000e-004 | 0.0277 | 7.7600e-003 | 6.6000e-004 | 8.4200e-003 | | 108.6023 | 108.6023 | 4.0200e-003 | | 108.7027 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0396** | **0.4272** | **0.3111** | **1.7100e-003** | **0.0962** | **1.2900e-003** | **0.0974** | **0.0261** | **1.2100e-003** | **0.0274** | | **178.5224** | **178.5224** | **6.2800e-003** | | **178.6794** |

## 3.5 Foundations and slabs - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | | lb/day | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | | lb/day | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | 0.0000 | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | **0.0000** | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | | lb/day | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

### 3.6 Building construction - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | 0.0000 | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | **0.0000** | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## 3.7 Tank construction - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## 3.8 Equipment installation - 2025

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

# 3.9 Wellhead slab - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## 3.10 Filters - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | lb/day | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## 3.11 MCC installation - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0288 | 0.0212 | 0.1971 | 5.4000e-004 | 0.0657 | 4.8000e-004 | 0.0662 | 0.0174 | 4.4000e-004 | 0.0179 | | 53.7654 | 53.7654 | 1.6000e-003 | | 53.8054 |
| **Total** | **0.0337** | **0.2036** | **0.2479** | **1.0500e-003** | **0.0792** | **8.3000e-004** | **0.0800** | **0.0213** | **7.7000e-004** | **0.0221** | | **108.0666** | **108.0666** | **3.6100e-003** | | **108.1568** |

## 3.12 Facility startup and testing - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0216 | 0.0159 | 0.1478 | 4.0000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 40.3240 | 40.3240 | 1.2000e-003 | | 40.3541 |
| **Total** | **0.0265** | **0.1983** | **0.1987** | **9.1000e-004** | **0.0628** | **7.1000e-004** | **0.0635** | **0.0170** | **6.6000e-004** | **0.0176** | | **94.6252** | **94.6252** | **3.2100e-003** | | **94.7055** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.5097 | 4.7980 | 5.6615 | 0.0110 | | 0.2065 | 0.2065 | | 0.1976 | 0.1976 | 0.0000 | 1,050.4785 | 1,050.4785 | 0.1613 | | 1,054.5102 |
| **Total** | **0.5097** | **4.7980** | **5.6615** | **0.0110** | | **0.2065** | **0.2065** | | **0.1976** | **0.1976** | **0.0000** | **1,050.4785** | **1,050.4785** | **0.1613** | | **1,054.5102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0216 | 0.0159 | 0.1478 | 4.0000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 40.3240 | 40.3240 | 1.2000e-003 | | 40.3541 |
| **Total** | **0.0265** | **0.1983** | **0.1987** | **9.1000e-004** | **0.0628** | **7.1000e-004** | **0.0635** | **0.0170** | **6.6000e-004** | **0.0176** | | **94.6252** | **94.6252** | **3.2100e-003** | | **94.7055** |

# 3.13 Architectural coatings - 2025

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 4.2077 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1709 | 1.1455 | 1.8091 | 2.9700e-003 | | 0.0515 | 0.0515 | | 0.0515 | 0.0515 | | 281.4481 | 281.4481 | 0.0154 | | 281.8319 |
| **Total** | **4.3785** | **1.1455** | **1.8091** | **2.9700e-003** | | **0.0515** | **0.0515** | | **0.0515** | **0.0515** | | **281.4481** | **281.4481** | **0.0154** | | **281.8319** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 3.6000e-003 | 2.6500e-003 | 0.0246 | 7.0000e-005 | 8.2100e-003 | 6.0000e-005 | 8.2700e-003 | 2.1800e-003 | 5.0000e-005 | 2.2300e-003 | | 6.7207 | 6.7207 | 2.0000e-004 | | 6.7257 |
| **Total** | **3.6000e-003** | **2.6500e-003** | **0.0246** | **7.0000e-005** | **8.2100e-003** | **6.0000e-005** | **8.2700e-003** | **2.1800e-003** | **5.0000e-005** | **2.2300e-003** | | **6.7207** | **6.7207** | **2.0000e-004** | | **6.7257** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 4.2077 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.1709 | 1.1455 | 1.8091 | 2.9700e-003 | | 0.0515 | 0.0515 | | 0.0515 | 0.0515 | 0.0000 | 281.4481 | 281.4481 | 0.0154 | | 281.8319 |
| **Total** | **4.3785** | **1.1455** | **1.8091** | **2.9700e-003** | | **0.0515** | **0.0515** | | **0.0515** | **0.0515** | **0.0000** | **281.4481** | **281.4481** | **0.0154** | | **281.8319** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 3.6000e-003 | 2.6500e-003 | 0.0246 | 7.0000e-005 | 8.2100e-003 | 6.0000e-005 | 8.2700e-003 | 2.1800e-003 | 5.0000e-005 | 2.2300e-003 | | 6.7207 | 6.7207 | 2.0000e-004 | | 6.7257 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **3.6000e-003** | **2.6500e-003** | **0.0246** | **7.0000e-005** | **8.2100e-003** | **6.0000e-005** | **8.2700e-003** | **2.1800e-003** | **5.0000e-005** | **2.2300e-003** | | **6.7207** | **6.7207** | **2.0000e-004** | | **6.7257** |

### 3.14 Demobilization - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7363 | 7.2181 | 10.1058 | 0.0164 | | 0.3240 | 0.3240 | | 0.2981 | 0.2981 | | 1,583.2419 | 1,583.2419 | 0.5121 | | 1,596.0433 |
| **Total** | **0.7363** | **7.2181** | **10.1058** | **0.0164** | | **0.3240** | **0.3240** | | **0.2981** | **0.2981** | | **1,583.2419** | **1,583.2419** | **0.5121** | | **1,596.0433** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0216 | 0.0159 | 0.1478 | 4.0000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 40.3240 | 40.3240 | 1.2000e-003 | | 40.3541 |
| **Total** | **0.0265** | **0.1983** | **0.1987** | **9.1000e-004** | **0.0628** | **7.1000e-004** | **0.0635** | **0.0170** | **6.6000e-004** | **0.0176** | | **94.6252** | **94.6252** | **3.2100e-003** | | **94.7055** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.7363 | 7.2181 | 10.1058 | 0.0164 | | 0.3240 | 0.3240 | | 0.2981 | 0.2981 | 0.0000 | 1,583.2419 | 1,583.2419 | 0.5121 | | 1,596.0433 |
| **Total** | **0.7363** | **7.2181** | **10.1058** | **0.0164** | | **0.3240** | **0.3240** | | **0.2981** | **0.2981** | **0.0000** | **1,583.2419** | **1,583.2419** | **0.5121** | | **1,596.0433** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.8300e-003 | 0.1824 | 0.0509 | 5.1000e-004 | 0.0135 | 3.5000e-004 | 0.0138 | 3.8800e-003 | 3.3000e-004 | 4.2100e-003 | | 54.3012 | 54.3012 | 2.0100e-003 | | 54.3514 |
| Worker | 0.0216 | 0.0159 | 0.1478 | 4.0000e-004 | 0.0493 | 3.6000e-004 | 0.0497 | 0.0131 | 3.3000e-004 | 0.0134 | | 40.3240 | 40.3240 | 1.2000e-003 | | 40.3541 |
| **Total** | **0.0265** | **0.1983** | **0.1987** | **9.1000e-004** | **0.0628** | **7.1000e-004** | **0.0635** | **0.0170** | **6.6000e-004** | **0.0176** | | **94.6252** | **94.6252** | **3.2100e-003** | | **94.7055** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.590151 | 0.025976 | 0.205990 | 0.112108 | 0.016651 | 0.004427 | 0.021270 | 0.012848 | 0.001229 | 0.002212 | 0.005302 | 0.000981 | 0.000854 |
| Other Asphalt Surfaces | 0.590151 | 0.025976 | 0.205990 | 0.112108 | 0.016651 | 0.004427 | 0.021270 | 0.012848 | 0.001229 | 0.002212 | 0.005302 | 0.000981 | 0.000854 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| Unmitigated | 0.0300 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |

### 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 3.8000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0296 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | | **3.4000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 3.8000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0296 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.5000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 3.2000e-004 | 3.2000e-004 | 0.0000 | | 3.4000e-004 |
| **Total** | **0.0300** | **0.0000** | **1.5000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **3.2000e-004** | **3.2000e-004** | **0.0000** | | **3.4000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Intertie Connection City SqCWD-CWD

**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 24.00 | 1000sqft | 0.55 | 24,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intertie Connection City SqCWD-CWD construction

Land Use - Surrogate land use for intertie connection

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Off-road Equipment - Equipment based on City inputv

Off-road Equipment - Equipment based on City input

Off-road Equipment - Equipment based on City input

Grading - Estimated 1,267 CY of excavated material for export and 0.5 acre total graded

Trips and VMT - Construction vehicle information based on City input

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 135.00 |
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | PhaseEndDate | 10/4/2022 | 11/9/2022 |
| tblConstructionPhase | PhaseEndDate | 9/20/2022 | 11/16/2022 |
| tblConstructionPhase | PhaseEndDate | 5/3/2022 | 11/5/2022 |
| tblConstructionPhase | PhaseEndDate | 9/27/2022 | 11/9/2022 |
| tblConstructionPhase | PhaseStartDate | 9/28/2022 | 10/12/2022 |
| tblConstructionPhase | PhaseStartDate | 5/4/2022 | 11/10/2022 |
| tblConstructionPhase | PhaseStartDate | 9/21/2022 | 10/12/2022 |
| tblGrading | AcresOfGrading | 67.50 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 1,267.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 4.00 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 2.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0806 | 0.8237 | 0.7477 | 1.5400e-003 | 9.3500e-003 | 0.0325 | 0.0419 | 2.5000e-003 | 0.0300 | 0.0325 | 0.0000 | 136.8461 | 136.8461 | 0.0373 | 0.0000 | 137.7787 |
| **Maximum** | **0.0806** | **0.8237** | **0.7477** | **1.5400e-003** | **9.3500e-003** | **0.0325** | **0.0419** | **2.5000e-003** | **0.0300** | **0.0325** | **0.0000** | **136.8461** | **136.8461** | **0.0373** | **0.0000** | **137.7787** |

**Mitigated Construction**

| Year | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0806 | 0.8237 | 0.7477 | 1.5400e-003 | 9.1800e-003 | 0.0325 | 0.0417 | 2.4800e-003 | 0.0300 | 0.0325 | 0.0000 | 136.8459 | 136.8459 | 0.0373 | 0.0000 | 137.7786 |
| **Maximum** | **0.0806** | **0.8237** | **0.7477** | **1.5400e-003** | **9.1800e-003** | **0.0325** | **0.0417** | **2.4800e-003** | **0.0300** | **0.0325** | **0.0000** | **136.8459** | **136.8459** | **0.0373** | **0.0000** | **137.7786** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **1.82** | **0.00** | **0.43** | **0.80** | **0.00** | **0.06** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **5-1-2022** | **7-31-2022** | 0.4010 | 0.4010 |
| **2** | **8-1-2022** | **9-30-2022** | 0.2659 | 0.2659 |
| | | **Highest** | 0.4010 | 0.4010 |

## 2.2 Overall Operational

**Unmitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Total | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **2.0800e-003** | **0.0000** | **3.1000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.0000** | **6.3000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Pipeline installation | Grading | 5/1/2022 | 11/5/2022 | 5 | 135 | |
| 2 | Paving | Paving | 10/12/2022 | 11/9/2022 | 5 | 21 | |
| 3 | Architectural Coating | Architectural Coating | 10/12/2022 | 11/9/2022 | 5 | 21 | |
| 4 | Testing | Building Construction | 11/10/2022 | 11/16/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.55**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,440**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Paving | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Pipeline installation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Pipeline installation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Pipeline installation | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 4.00 | 130 | 0.42 |
| Paving | Rollers | 1 | 4.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Pipeline installation | Graders | 1 | 8.00 | 187 | 0.41 |
| Pipeline installation | Excavators | 1 | 8.00 | 158 | 0.38 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pipeline installation | 4 | 8.00 | 4.00 | 158.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 3 | 8.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Pipeline installation - 2022

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 3.2000e-004 | 0.0000 | 3.2000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0639 | 0.7010 | 0.6381 | 1.2200e-003 | | 0.0293 | 0.0293 | | 0.0269 | 0.0269 | 0.0000 | 106.7798 | 106.7798 | 0.0345 | 0.0000 | 107.6432 |
| **Total** | **0.0639** | **0.7010** | **0.6381** | **1.2200e-003** | **3.2000e-004** | **0.0293** | **0.0296** | **4.0000e-005** | **0.0269** | **0.0270** | **0.0000** | **106.7798** | **106.7798** | **0.0345** | **0.0000** | **107.6432** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 5.7000e-004 | 0.0231 | 5.3400e-003 | 6.0000e-005 | 1.3200e-003 | 9.0000e-005 | 1.4100e-003 | 3.6000e-004 | 8.0000e-005 | 4.5000e-004 | 0.0000 | 6.0662 | 6.0662 | 2.5000e-004 | 0.0000 | 6.0723 |
| Vendor | 8.8000e-004 | 0.0313 | 8.0700e-003 | 7.0000e-005 | 1.7700e-003 | 9.0000e-005 | 1.8600e-003 | 5.1000e-004 | 9.0000e-005 | 6.0000e-004 | 0.0000 | 6.9311 | 6.9311 | 2.7000e-004 | 0.0000 | 6.9378 |
| Worker | 2.1200e-003 | 1.8000e-003 | 0.0165 | 4.0000e-005 | 4.2700e-003 | 3.0000e-005 | 4.3100e-003 | 1.1400e-003 | 3.0000e-005 | 1.1700e-003 | 0.0000 | 3.7014 | 3.7014 | 1.4000e-004 | 0.0000 | 3.7048 |
| **Total** | **3.5700e-003** | **0.0562** | **0.0300** | **1.7000e-004** | **7.3600e-003** | **2.1000e-004** | **7.5800e-003** | **2.0100e-003** | **2.0000e-004** | **2.2200e-003** | **0.0000** | **16.6986** | **16.6986** | **6.6000e-004** | **0.0000** | **16.7149** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.4000e-004 | 0.0000 | 1.4000e-004 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0639 | 0.7010 | 0.6381 | 1.2200e-003 | | 0.0293 | 0.0293 | | 0.0269 | 0.0269 | 0.0000 | 106.7797 | 106.7797 | 0.0345 | 0.0000 | 107.6431 |
| **Total** | **0.0639** | **0.7010** | **0.6381** | **1.2200e-003** | **1.4000e-004** | **0.0293** | **0.0294** | **2.0000e-005** | **0.0269** | **0.0269** | **0.0000** | **106.7797** | **106.7797** | **0.0345** | **0.0000** | **107.6431** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 5.7000e-004 | 0.0231 | 5.3400e-003 | 6.0000e-005 | 1.3200e-003 | 9.0000e-005 | 1.4100e-003 | 3.6000e-004 | 8.0000e-005 | 4.5000e-004 | 0.0000 | 6.0662 | 6.0662 | 2.5000e-004 | 0.0000 | 6.0723 |
| Vendor | 8.8000e-004 | 0.0313 | 8.0700e-003 | 7.0000e-005 | 1.7700e-003 | 9.0000e-005 | 1.8600e-003 | 5.1000e-004 | 9.0000e-005 | 6.0000e-004 | 0.0000 | 6.9311 | 6.9311 | 2.7000e-004 | 0.0000 | 6.9378 |
| Worker | 2.1200e-003 | 1.8000e-003 | 0.0165 | 4.0000e-005 | 4.2700e-003 | 3.0000e-005 | 4.3100e-003 | 1.1400e-003 | 3.0000e-005 | 1.1700e-003 | 0.0000 | 3.7014 | 3.7014 | 1.4000e-004 | 0.0000 | 3.7048 |
| **Total** | **3.5700e-003** | **0.0562** | **0.0300** | **1.7000e-004** | **7.3600e-003** | **2.1000e-004** | **7.5800e-003** | **2.0100e-003** | **2.0000e-004** | **2.2200e-003** | **0.0000** | **16.6986** | **16.6986** | **6.6000e-004** | **0.0000** | **16.7149** |

## 3.3 Paving - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.8900e-003 | 0.0292 | 0.0383 | 6.0000e-005 | | 1.4900e-003 | 1.4900e-003 | | 1.3700e-003 | 1.3700e-003 | 0.0000 | 5.2572 | 5.2572 | 1.7000e-003 | 0.0000 | 5.2997 |
| Paving | 7.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **3.6100e-003** | **0.0292** | **0.0383** | **6.0000e-005** | | **1.4900e-003** | **1.4900e-003** | | **1.3700e-003** | **1.3700e-003** | **0.0000** | **5.2572** | **5.2572** | **1.7000e-003** | **0.0000** | **5.2997** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.4000e-004 | 4.8700e-003 | 1.2600e-003 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.9000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0782 | 1.0782 | 4.0000e-005 | 0.0000 | 1.0792 |
| Worker | 3.3000e-004 | 2.8000e-004 | 2.5700e-003 | 1.0000e-005 | 6.6000e-004 | 1.0000e-005 | 6.7000e-004 | 1.8000e-004 | 1.0000e-005 | 1.8000e-004 | 0.0000 | 0.5758 | 0.5758 | 2.0000e-005 | 0.0000 | 0.5763 |
| **Total** | **4.7000e-004** | **5.1500e-003** | **3.8300e-003** | **2.0000e-005** | **9.3000e-004** | **2.0000e-005** | **9.6000e-004** | **2.6000e-004** | **2.0000e-005** | **2.7000e-004** | **0.0000** | **1.6539** | **1.6539** | **6.0000e-005** | **0.0000** | **1.6555** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.8900e-003 | 0.0292 | 0.0383 | 6.0000e-005 | | 1.4900e-003 | 1.4900e-003 | | 1.3700e-003 | 1.3700e-003 | 0.0000 | 5.2572 | 5.2572 | 1.7000e-003 | 0.0000 | 5.2997 |
| Paving | 7.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.6100e-003** | **0.0292** | **0.0383** | **6.0000e-005** | | **1.4900e-003** | **1.4900e-003** | | **1.3700e-003** | **1.3700e-003** | **0.0000** | **5.2572** | **5.2572** | **1.7000e-003** | **0.0000** | **5.2997** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.4000e-004 | 4.8700e-003 | 1.2600e-003 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.9000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0782 | 1.0782 | 4.0000e-005 | 0.0000 | 1.0792 |
| Worker | 3.3000e-004 | 2.8000e-004 | 2.5700e-003 | 1.0000e-005 | 6.6000e-004 | 1.0000e-005 | 6.7000e-004 | 1.8000e-004 | 1.0000e-005 | 1.8000e-004 | 0.0000 | 0.5758 | 0.5758 | 2.0000e-005 | 0.0000 | 0.5763 |
| **Total** | **4.7000e-004** | **5.1500e-003** | **3.8300e-003** | **2.0000e-005** | **9.3000e-004** | **2.0000e-005** | **9.6000e-004** | **2.6000e-004** | **2.0000e-005** | **2.7000e-004** | **0.0000** | **1.6539** | **1.6539** | **6.0000e-005** | **0.0000** | **1.6555** |

## 3.4 Architectural Coating - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 5.0100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.8600e-003 | 0.0197 | 0.0254 | 4.0000e-005 | | 1.1400e-003 | 1.1400e-003 | | 1.1400e-003 | 1.1400e-003 | 0.0000 | 3.5746 | 3.5746 | 2.3000e-004 | 0.0000 | 3.5804 |
| **Total** | **7.8700e-003** | **0.0197** | **0.0254** | **4.0000e-005** | | **1.1400e-003** | **1.1400e-003** | | **1.1400e-003** | **1.1400e-003** | **0.0000** | **3.5746** | **3.5746** | **2.3000e-004** | **0.0000** | **3.5804** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.4000e-004 | 4.8700e-003 | 1.2600e-003 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.9000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0782 | 1.0782 | 4.0000e-005 | 0.0000 | 1.0792 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 1.6000e-004 | 1.4000e-004 | 1.2900e-003 | 0.0000 | 3.3000e-004 | 0.0000 | 3.4000e-004 | 9.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2879 | 0.2879 | 1.0000e-005 | 0.0000 | 0.2882 |
| **Total** | **3.0000e-004** | **5.0100e-003** | **2.5500e-003** | **1.0000e-005** | **6.0000e-004** | **1.0000e-005** | **6.3000e-004** | **1.7000e-004** | **1.0000e-005** | **1.8000e-004** | **0.0000** | **1.3661** | **1.3661** | **5.0000e-005** | **0.0000** | **1.3674** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 5.0100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.8600e-003 | 0.0197 | 0.0254 | 4.0000e-005 | | 1.1400e-003 | 1.1400e-003 | | 1.1400e-003 | 1.1400e-003 | 0.0000 | 3.5746 | 3.5746 | 2.3000e-004 | 0.0000 | 3.5804 |
| **Total** | **7.8700e-003** | **0.0197** | **0.0254** | **4.0000e-005** | | **1.1400e-003** | **1.1400e-003** | | **1.1400e-003** | **1.1400e-003** | **0.0000** | **3.5746** | **3.5746** | **2.3000e-004** | **0.0000** | **3.5804** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.4000e-004 | 4.8700e-003 | 1.2600e-003 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.9000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0782 | 1.0782 | 4.0000e-005 | 0.0000 | 1.0792 |
| Worker | 1.6000e-004 | 1.4000e-004 | 1.2900e-003 | 0.0000 | 3.3000e-004 | 0.0000 | 3.4000e-004 | 9.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2879 | 0.2879 | 1.0000e-005 | 0.0000 | 0.2882 |
| **Total** | **3.0000e-004** | **5.0100e-003** | **2.5500e-003** | **1.0000e-005** | **6.0000e-004** | **1.0000e-005** | **6.3000e-004** | **1.7000e-004** | **1.0000e-005** | **1.8000e-004** | **0.0000** | **1.3661** | **1.3661** | **5.0000e-005** | **0.0000** | **1.3674** |

## 3.5 Testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.2000e-004 | 7.3200e-003 | 9.1900e-003 | 2.0000e-005 | | 3.7000e-004 | 3.7000e-004 | | 3.7000e-004 | 3.7000e-004 | 0.0000 | 1.4130 | 1.4130 | 7.0000e-005 | 0.0000 | 1.4147 |
| **Total** | **8.2000e-004** | **7.3200e-003** | **9.1900e-003** | **2.0000e-005** | | **3.7000e-004** | **3.7000e-004** | | **3.7000e-004** | **3.7000e-004** | **0.0000** | **1.4130** | **1.4130** | **7.0000e-005** | **0.0000** | **1.4147** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **6.0000e-005** | **5.0000e-005** | **4.6000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1028** | **0.1028** | **0.0000** | **0.0000** | **0.1029** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.2000e-004 | 7.3200e-003 | 9.1900e-003 | 2.0000e-005 | | 3.7000e-004 | 3.7000e-004 | | 3.7000e-004 | 3.7000e-004 | 0.0000 | 1.4130 | 1.4130 | 7.0000e-005 | 0.0000 | 1.4147 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **8.2000e-004** | **7.3200e-003** | **9.1900e-003** | **2.0000e-005** | | **3.7000e-004** | **3.7000e-004** | | **3.7000e-004** | **3.7000e-004** | **0.0000** | **1.4130** | **1.4130** | **7.0000e-005** | **0.0000** | **1.4147** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **6.0000e-005** | **5.0000e-005** | **4.6000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1028** | **0.1028** | **0.0000** | **0.0000** | **0.1029** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |
| Other Asphalt Surfaces | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**<u>Mitigated</u>**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| Unmitigated | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 5.0000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 1.5500e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 3.0000e-005 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| **Total** | **2.0800e-003** | **0.0000** | **3.1000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.0000** | **6.3000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 5.0000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 1.5500e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 3.0000e-005 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.0800e-003** | **0.0000** | **3.1000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.0000** | **6.3000e-004** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**<u>Unmitigated</u>**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**<u>Mitigated</u>**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | tons | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Intertie Connection City SqCWD-CWD
## Santa Cruz County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 24.00 | 1000sqft | 0.55 | 24,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intertie Connection City SqCWD-CWD construction

Land Use - Surrogate land use for intertie connection

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Off-road Equipment - Equipment based on City inputv

Off-road Equipment - Equipment based on City input

Off-road Equipment - Equipment based on City input

Grading - Estimated 1,267 CY of excavated material for export and 0.5 acre total graded

Trips and VMT - Construction vehicle information based on City input

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 135.00 |
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | PhaseEndDate | 10/4/2022 | 11/9/2022 |
| tblConstructionPhase | PhaseEndDate | 9/20/2022 | 11/16/2022 |
| tblConstructionPhase | PhaseEndDate | 5/3/2022 | 11/5/2022 |
| tblConstructionPhase | PhaseEndDate | 9/27/2022 | 11/9/2022 |
| tblConstructionPhase | PhaseStartDate | 9/28/2022 | 10/12/2022 |
| tblConstructionPhase | PhaseStartDate | 5/4/2022 | 11/10/2022 |
| tblConstructionPhase | PhaseStartDate | 9/21/2022 | 10/12/2022 |
| tblGrading | AcresOfGrading | 67.50 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 1,267.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 4.00 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 2.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1644 | 16.8154 | 16.5640 | 0.0334 | 0.2702 | 0.6910 | 0.9612 | 0.0729 | 0.6446 | 0.7175 | 0.0000 | 3,271.6888 | 3,271.6888 | 0.7894 | 0.0000 | 3,291.4240 |
| **Maximum** | **2.1644** | **16.8154** | **16.5640** | **0.0334** | **0.2702** | **0.6910** | **0.9612** | **0.0729** | **0.6446** | **0.7175** | **0.0000** | **3,271.6888** | **3,271.6888** | **0.7894** | **0.0000** | **3,291.4240** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1644 | 16.8154 | 16.5640 | 0.0334 | 0.2676 | 0.6910 | 0.9586 | 0.0726 | 0.6446 | 0.7172 | 0.0000 | 3,271.6888 | 3,271.6888 | 0.7894 | 0.0000 | 3,291.4240 |
| **Maximum** | **2.1644** | **16.8154** | **16.5640** | **0.0334** | **0.2676** | **0.6910** | **0.9586** | **0.0726** | **0.6446** | **0.7172** | **0.0000** | **3,271.6888** | **3,271.6888** | **0.7894** | **0.0000** | **3,291.4240** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.97** | **0.00** | **0.27** | **0.41** | **0.00** | **0.04** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.6000e-003** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.6000e-003** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Pipeline installation | Grading | 5/1/2022 | 11/5/2022 | 5 | 135 | |
| 2 | Paving | Paving | 10/12/2022 | 11/9/2022 | 5 | 21 | |
| 3 | Architectural Coating | Architectural Coating | 10/12/2022 | 11/9/2022 | 5 | 21 | |
| 4 | Testing | Building Construction | 11/10/2022 | 11/16/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.55**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,440**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Paving | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

| | | | | | |
|---|---|---|---|---|---|
| Pipeline installation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Pipeline installation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Pipeline installation | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 4.00 | 130 | 0.42 |
| Paving | Rollers | 1 | 4.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Pipeline installation | Graders | 1 | 8.00 | 187 | 0.41 |
| Pipeline installation | Excavators | 1 | 8.00 | 158 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pipeline installation | 4 | 8.00 | 4.00 | 158.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 3 | 8.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Pipeline installation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.7500e-003 | 0.0000 | 4.7500e-003 | 5.5000e-004 | 0.0000 | 5.5000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.9468 | 10.3859 | 9.4528 | 0.0180 | | 0.4334 | 0.4334 | | 0.3987 | 0.3987 | | 1,743.7721 | 1,743.7721 | 0.5640 | | 1,757.8714 |
| **Total** | **0.9468** | **10.3859** | **9.4528** | **0.0180** | **4.7500e-003** | **0.4334** | **0.4381** | **5.5000e-004** | **0.3987** | **0.3992** | | **1,743.7721** | **1,743.7721** | **0.5640** | | **1,757.8714** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 8.3000e-003 | 0.3365 | 0.0774 | 9.3000e-004 | 0.0203 | 1.2700e-003 | 0.0215 | 5.5400e-003 | 1.2100e-003 | 6.7500e-003 | | 99.6360 | 99.6360 | 3.9600e-003 | | 99.7350 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0520** | **0.8183** | **0.4432** | **2.6500e-003** | **0.1130** | **3.1600e-003** | **0.1161** | **0.0307** | **3.0000e-003** | **0.0337** | | **277.2343** | **277.2343** | **0.0105** | | **277.4974** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.1400e-003 | 0.0000 | 2.1400e-003 | 2.5000e-004 | 0.0000 | 2.5000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.9468 | 10.3859 | 9.4528 | 0.0180 | | 0.4334 | 0.4334 | | 0.3987 | 0.3987 | 0.0000 | 1,743.7721 | 1,743.7721 | 0.5640 | | 1,757.8714 |
| **Total** | **0.9468** | **10.3859** | **9.4528** | **0.0180** | **2.1400e-003** | **0.4334** | **0.4355** | **2.5000e-004** | **0.3987** | **0.3989** | **0.0000** | **1,743.7721** | **1,743.7721** | **0.5640** | | **1,757.8714** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 8.3000e-003 | 0.3365 | 0.0774 | 9.3000e-004 | 0.0203 | 1.2700e-003 | 0.0215 | 5.5400e-003 | 1.2100e-003 | 6.7500e-003 | | 99.6360 | 99.6360 | 3.9600e-003 | | 99.7350 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0520** | **0.8183** | **0.4432** | **2.6500e-003** | **0.1130** | **3.1600e-003** | **0.1161** | **0.0307** | **3.0000e-003** | **0.0337** | | **277.2343** | **277.2343** | **0.0105** | | **277.4974** |

## 3.3 Paving - 2022

### Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2757 | 2.7812 | 3.6451 | 5.7000e-003 | | 0.1420 | 0.1420 | | 0.1306 | 0.1306 | | 551.9151 | 551.9151 | 0.1785 | | 556.3776 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.3443** | **2.7812** | **3.6451** | **5.7000e-003** | | **0.1420** | **0.1420** | | **0.1306** | **0.1306** | | **551.9151** | **551.9151** | **0.1785** | | **556.3776** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0437** | **0.4819** | **0.3657** | **1.7200e-003** | **0.0927** | **1.8900e-003** | **0.0946** | **0.0252** | **1.7900e-003** | **0.0270** | | **177.5983** | **177.5983** | **6.5600e-003** | | **177.7624** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2757 | 2.7812 | 3.6451 | 5.7000e-003 | | 0.1420 | 0.1420 | | 0.1306 | 0.1306 | 0.0000 | 551.9151 | 551.9151 | 0.1785 | | 556.3776 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.3443** | **2.7812** | **3.6451** | **5.7000e-003** | | **0.1420** | **0.1420** | | **0.1306** | **0.1306** | **0.0000** | **551.9151** | **551.9151** | **0.1785** | | **556.3776** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |

| Total | 0.0437 | 0.4819 | 0.3657 | 1.7200e-003 | 0.0927 | 1.8900e-003 | 0.0946 | 0.0252 | 1.7900e-003 | 0.0270 | | 177.5983 | 177.5983 | 6.5600e-003 | | 177.7624 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 3.4 Architectural Coating - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **0.7495** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0155 | 0.0117 | 0.1266 | 3.2000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 31.6933 | 31.6933 | 1.1500e-003 | | 31.7221 |
| **Total** | **0.0282** | **0.4702** | **0.2391** | **1.4000e-003** | **0.0598** | **1.6300e-003** | **0.0615** | **0.0165** | **1.5500e-003** | **0.0180** | | **145.9050** | **145.9050** | **5.4100e-003** | | **146.0403** |

**Mitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | 0.0000 | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **0.7495** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | **0.0000** | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

**Mitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0127 | 0.4585 | 0.1125 | 1.0800e-003 | 0.0270 | 1.3700e-003 | 0.0283 | 7.7500e-003 | 1.3100e-003 | 9.0600e-003 | | 114.2117 | 114.2117 | 4.2600e-003 | | 114.3183 |
| Worker | 0.0155 | 0.0117 | 0.1266 | 3.2000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 31.6933 | 31.6933 | 1.1500e-003 | | 31.7221 |
| **Total** | **0.0282** | **0.4702** | **0.2391** | **1.4000e-003** | **0.0598** | **1.6300e-003** | **0.0615** | **0.0165** | **1.5500e-003** | **0.0180** | | **145.9050** | **145.9050** | **5.4100e-003** | | **146.0403** |

## 3.5 Testing - 2022

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0232** | **0.0175** | **0.1899** | **4.8000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **47.5400** | **47.5400** | **1.7300e-003** | | **47.5831** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | 0.0000 | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | **0.0000** | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0232** | **0.0175** | **0.1899** | **4.8000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **47.5400** | **47.5400** | **1.7300e-003** | | **47.5831** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |
| Other Asphalt Surfaces | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| Unmitigated | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.6000e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.6000e-003** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Intertie Connection City SqCWD-CWD
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 24.00 | 1000sqft | 0.55 | 24,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intertie Connection City SqCWD-CWD construction

Land Use - Surrogate land use for intertie connection

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Off-road Equipment - Equipment based on City inputv

Off-road Equipment - Equipment based on City input

Off-road Equipment - Equipment based on City input

Grading - Estimated 1,267 CY of excavated material for export and 0.5 acre total graded

Trips and VMT - Construction vehicle information based on City input

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 135.00 |
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | PhaseEndDate | 10/4/2022 | 11/9/2022 |
| tblConstructionPhase | PhaseEndDate | 9/20/2022 | 11/16/2022 |
| tblConstructionPhase | PhaseEndDate | 5/3/2022 | 11/5/2022 |
| tblConstructionPhase | PhaseEndDate | 9/27/2022 | 11/9/2022 |
| tblConstructionPhase | PhaseStartDate | 9/28/2022 | 10/12/2022 |
| tblConstructionPhase | PhaseStartDate | 5/4/2022 | 11/10/2022 |
| tblConstructionPhase | PhaseStartDate | 9/21/2022 | 10/12/2022 |
| tblGrading | AcresOfGrading | 67.50 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 1,267.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 4.00 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 2.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1766 | 16.8460 | 16.6204 | 0.0333 | 0.2702 | 0.6912 | 0.9614 | 0.0729 | 0.6448 | 0.7178 | 0.0000 | 3,255.5427 | 3,255.5427 | 0.7903 | 0.0000 | 3,275.2989 |
| **Maximum** | **2.1766** | **16.8460** | **16.6204** | **0.0333** | **0.2702** | **0.6912** | **0.9614** | **0.0729** | **0.6448** | **0.7178** | **0.0000** | **3,255.5427** | **3,255.5427** | **0.7903** | **0.0000** | **3,275.2989** |

**Mitigated Construction**

| Year | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.1766 | 16.8460 | 16.6204 | 0.0333 | 0.2676 | 0.6912 | 0.9588 | 0.0726 | 0.6448 | 0.7175 | 0.0000 | 3,255.5427 | 3,255.5427 | 0.7903 | 0.0000 | 3,275.2989 |
| **Maximum** | **2.1766** | **16.8460** | **16.6204** | **0.0333** | **0.2676** | **0.6912** | **0.9588** | **0.0726** | **0.6448** | **0.7175** | **0.0000** | **3,255.5427** | **3,255.5427** | **0.7903** | **0.0000** | **3,275.2989** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.97** | **0.00** | **0.27** | **0.41** | **0.00** | **0.04** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.6000e-003** |

**Mitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.6000e-003** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Pipeline installation | Grading | 5/1/2022 | 11/5/2022 | 5 | 135 | |
| 2 | Paving | Paving | 10/12/2022 | 11/9/2022 | 5 | 21 | |
| 3 | Architectural Coating | Architectural Coating | 10/12/2022 | 11/9/2022 | 5 | 21 | |
| 4 | Testing | Building Construction | 11/10/2022 | 11/16/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.55**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,440**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Paving | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

| | | | | | |
|---|---|---|---|---|---|
| Pipeline installation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Pipeline installation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Pipeline installation | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 4.00 | 130 | 0.42 |
| Paving | Rollers | 1 | 4.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Pipeline installation | Graders | 1 | 8.00 | 187 | 0.41 |
| Pipeline installation | Excavators | 1 | 8.00 | 158 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pipeline installation | 4 | 8.00 | 4.00 | 158.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 3 | 8.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Pipeline installation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.7500e-003 | 0.0000 | 4.7500e-003 | 5.5000e-004 | 0.0000 | 5.5000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.9468 | 10.3859 | 9.4528 | 0.0180 | | 0.4334 | 0.4334 | | 0.3987 | 0.3987 | | 1,743.7721 | 1,743.7721 | 0.5640 | | 1,757.8714 |
| **Total** | **0.9468** | **10.3859** | **9.4528** | **0.0180** | **4.7500e-003** | **0.4334** | **0.4381** | **5.5000e-004** | **0.3987** | **0.3992** | | **1,743.7721** | **1,743.7721** | **0.5640** | | **1,757.8714** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 8.5300e-003 | 0.3430 | 0.0817 | 9.2000e-004 | 0.0203 | 1.3100e-003 | 0.0216 | 5.5400e-003 | 1.2500e-003 | 6.7900e-003 | | 98.2739 | 98.2739 | 4.1000e-003 | | 98.3764 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0568** | **0.8338** | **0.4652** | **2.5800e-003** | **0.1130** | **3.2700e-003** | **0.1162** | **0.0307** | **3.1000e-003** | **0.0338** | | **270.4455** | **270.4455** | **0.0109** | | **270.7177** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.1400e-003 | 0.0000 | 2.1400e-003 | 2.5000e-004 | 0.0000 | 2.5000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.9468 | 10.3859 | 9.4528 | 0.0180 | | 0.4334 | 0.4334 | | 0.3987 | 0.3987 | 0.0000 | 1,743.7721 | 1,743.7721 | 0.5640 | | 1,757.8714 |
| **Total** | **0.9468** | **10.3859** | **9.4528** | **0.0180** | **2.1400e-003** | **0.4334** | **0.4355** | **2.5000e-004** | **0.3987** | **0.3989** | **0.0000** | **1,743.7721** | **1,743.7721** | **0.5640** | | **1,757.8714** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 8.5300e-003 | 0.3430 | 0.0817 | 9.2000e-004 | 0.0203 | 1.3100e-003 | 0.0216 | 5.5400e-003 | 1.2500e-003 | 6.7900e-003 | | 98.2739 | 98.2739 | 4.1000e-003 | | 98.3764 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0568** | **0.8338** | **0.4652** | **2.5800e-003** | **0.1130** | **3.2700e-003** | **0.1162** | **0.0307** | **3.1000e-003** | **0.0338** | | **270.4455** | **270.4455** | **0.0109** | | **270.7177** |

## 3.3 Paving - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2757 | 2.7812 | 3.6451 | 5.7000e-003 | | 0.1420 | 0.1420 | | 0.1306 | 0.1306 | | 551.9151 | 551.9151 | 0.1785 | | 556.3776 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.3443** | **2.7812** | **3.6451** | **5.7000e-003** | | **0.1420** | **0.1420** | | **0.1306** | **0.1306** | | **551.9151** | **551.9151** | **0.1785** | | **556.3776** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0483** | **0.4908** | **0.3835** | **1.6600e-003** | **0.0927** | **1.9600e-003** | **0.0946** | **0.0252** | **1.8500e-003** | **0.0270** | | **172.1716** | **172.1716** | **6.7900e-003** | | **172.3413** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2757 | 2.7812 | 3.6451 | 5.7000e-003 | | 0.1420 | 0.1420 | | 0.1306 | 0.1306 | 0.0000 | 551.9151 | 551.9151 | 0.1785 | | 556.3776 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.3443** | **2.7812** | **3.6451** | **5.7000e-003** | | **0.1420** | **0.1420** | | **0.1306** | **0.1306** | **0.0000** | **551.9151** | **551.9151** | **0.1785** | | **556.3776** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0483** | **0.4908** | **0.3835** | **1.6600e-003** | **0.0927** | **1.9600e-003** | **0.0946** | **0.0252** | **1.8500e-003** | **0.0270** | | **172.1716** | **172.1716** | **6.7900e-003** | | **172.3413** |

## 3.4 Architectural Coating - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **0.7495** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0174 | 0.0145 | 0.1279 | 3.0000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 30.1973 | 30.1973 | 1.1100e-003 | | 30.2252 |
| **Total** | **0.0309** | **0.4763** | **0.2557** | **1.3500e-003** | **0.0598** | **1.7000e-003** | **0.0615** | **0.0165** | **1.6100e-003** | **0.0181** | | **141.9743** | **141.9743** | **5.6700e-003** | | **142.1161** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | 0.0000 | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **0.7495** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | **0.0000** | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0135 | 0.4618 | 0.1278 | 1.0500e-003 | 0.0270 | 1.4400e-003 | 0.0284 | 7.7500e-003 | 1.3700e-003 | 9.1300e-003 | | 111.7770 | 111.7770 | 4.5600e-003 | | 111.8909 |
| Worker | 0.0174 | 0.0145 | 0.1279 | 3.0000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 30.1973 | 30.1973 | 1.1100e-003 | | 30.2252 |
| **Total** | **0.0309** | **0.4763** | **0.2557** | **1.3500e-003** | **0.0598** | **1.7000e-003** | **0.0615** | **0.0165** | **1.6100e-003** | **0.0181** | | **141.9743** | **141.9743** | **5.6700e-003** | | **142.1161** |

## 3.5 Testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0261** | **0.0218** | **0.1918** | **4.6000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **45.2960** | **45.2960** | **1.6700e-003** | | **45.3378** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | 0.0000 | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | **0.0000** | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0261** | **0.0218** | **0.1918** | **4.6000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **45.2960** | **45.2960** | **1.6700e-003** | | **45.3378** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |
| Other Asphalt Surfaces | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| Unmitigated | 0.0115 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.6000e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4500e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.6000e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4500e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.6000e-003** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Intertie Connection City-SVWD/SLVWD
**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 24.00 | 1000sqft | 0.55 | 24,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intertie Connection City-SVWD/SLVWD

Land Use - Surrogate land use for intertie connection

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Estimated 1,267 CY of excavated material for export and 0.5 acre total graded

Trips and VMT - Construction vehicle information based on City input

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|

| | | | |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 131.00 |
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | PhaseEndDate | 10/20/2027 | 11/10/2027 |
| tblConstructionPhase | PhaseEndDate | 10/6/2027 | 11/17/2027 |
| tblConstructionPhase | PhaseEndDate | 10/13/2027 | 11/10/2027 |
| tblConstructionPhase | PhaseStartDate | 10/14/2027 | 10/13/2027 |
| tblConstructionPhase | PhaseStartDate | 5/20/2027 | 11/11/2027 |
| tblConstructionPhase | PhaseStartDate | 10/7/2027 | 10/13/2027 |
| tblGrading | AcresOfGrading | 65.50 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 1,267.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 4.00 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 2.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2027 | 0.0629 | 0.5721 | 0.7086 | 1.4900e-003 | 9.1700e-003 | 0.0205 | 0.0297 | 2.4500e-003 | 0.0189 | 0.0214 | 0.0000 | 132.0021 | 132.0021 | 0.0361 | 0.0000 | 132.9048 |
| **Maximum** | **0.0629** | **0.5721** | **0.7086** | **1.4900e-003** | **9.1700e-003** | **0.0205** | **0.0297** | **2.4500e-003** | **0.0189** | **0.0214** | **0.0000** | **132.0021** | **132.0021** | **0.0361** | **0.0000** | **132.9048** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2027 | 0.0629 | 0.5721 | 0.7086 | 1.4900e-003 | 9.0000e-003 | 0.0205 | 0.0295 | 2.4300e-003 | 0.0189 | 0.0214 | 0.0000 | 132.0020 | 132.0020 | 0.0361 | 0.0000 | 132.9047 |
| **Maximum** | **0.0629** | **0.5721** | **0.7086** | **1.4900e-003** | **9.0000e-003** | **0.0205** | **0.0295** | **2.4300e-003** | **0.0189** | **0.0214** | **0.0000** | **132.0020** | **132.0020** | **0.0361** | **0.0000** | **132.9047** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 1.85 | 0.00 | 0.57 | 0.82 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| 1 | 5-2-2027 | 8-1-2027 | 0.2862 | 0.2862 |
| 2 | 8-2-2027 | 9-30-2027 | 0.1867 | 0.1867 |
| | | Highest | 0.2862 | 0.2862 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **2.0800e-003** | **0.0000** | **3.1000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.0000** | **6.3000e-004** |

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **2.0800e-003** | **0.0000** | **3.1000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.0000** | **6.3000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Pipeline installation | Grading | 5/2/2027 | 11/1/2027 | 5 | 131 | |
| 2 | Paving | Paving | 10/13/2027 | 11/10/2027 | 5 | 21 | |
| 3 | Architectural Coating | Architectural Coating | 10/13/2027 | 11/10/2027 | 5 | 21 | |
| 4 | Testing | Building Construction | 11/11/2027 | 11/17/2027 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.55**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,440**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Paving | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Pipeline installation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Pipeline installation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Pipeline installation | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 4.00 | 130 | 0.42 |
| Paving | Rollers | 1 | 4.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Pipeline Installation | Graders | 1 | 8.00 | 187 | 0.41 |
| Pipeline Installation | Excavators | 1 | 8.00 | 158 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pipeline installation | 4 | 8.00 | 4.00 | 158.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 3 | 8.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Pipeline installation - 2027

### Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 3.2000e-004 | 0.0000 | 3.2000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0486 | 0.4813 | 0.6100 | 1.1800e-003 | | 0.0183 | 0.0183 | | 0.0168 | 0.0168 | 0.0000 | 103.6705 | 103.6705 | 0.0335 | 0.0000 | 104.5087 |
| **Total** | **0.0486** | **0.4813** | **0.6100** | **1.1800e-003** | **3.2000e-004** | **0.0183** | **0.0186** | **4.0000e-005** | **0.0168** | **0.0169** | **0.0000** | **103.6705** | **103.6705** | **0.0335** | **0.0000** | **104.5087** |

### Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 4.0000e-004 | 0.0149 | 4.6700e-003 | 6.0000e-005 | 1.3300e-003 | 4.0000e-005 | 1.3600e-003 | 3.6000e-004 | 4.0000e-005 | 4.0000e-004 | 0.0000 | 5.7684 | 5.7684 | 2.4000e-004 | 0.0000 | 5.7743 |
| Vendor | 5.6000e-004 | 0.0227 | 5.8100e-003 | 7.0000e-005 | 1.7100e-003 | 4.0000e-005 | 1.7500e-003 | 5.0000e-004 | 4.0000e-005 | 5.3000e-004 | 0.0000 | 6.4731 | 6.4731 | 2.3000e-004 | 0.0000 | 6.4787 |
| Worker | 1.5200e-003 | 1.0500e-003 | 0.0106 | 3.0000e-005 | 4.1500e-003 | 3.0000e-005 | 4.1800e-003 | 1.1000e-003 | 3.0000e-005 | 1.1300e-003 | 0.0000 | 2.9723 | 2.9723 | 8.0000e-005 | 0.0000 | 2.9743 |
| **Total** | **2.4800e-003** | **0.0387** | **0.0211** | **1.6000e-004** | **7.1900e-003** | **1.1000e-004** | **7.2900e-003** | **1.9600e-003** | **1.1000e-004** | **2.0600e-003** | **0.0000** | **15.2139** | **15.2139** | **5.5000e-004** | **0.0000** | **15.2273** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 1.4000e-004 | 0.0000 | 1.4000e-004 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0486 | 0.4813 | 0.6100 | 1.1800e-003 | | 0.0183 | 0.0183 | | 0.0168 | 0.0168 | 0.0000 | 103.6704 | 103.6704 | 0.0335 | 0.0000 | 104.5086 |
| **Total** | **0.0486** | **0.4813** | **0.6100** | **1.1800e-003** | **1.4000e-004** | **0.0183** | **0.0184** | **2.0000e-005** | **0.0168** | **0.0169** | **0.0000** | **103.6704** | **103.6704** | **0.0335** | **0.0000** | **104.5086** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 4.0000e-004 | 0.0149 | 4.6700e-003 | 6.0000e-005 | 1.3300e-003 | 4.0000e-005 | 1.3600e-003 | 3.6000e-004 | 4.0000e-005 | 4.0000e-004 | 0.0000 | 5.7684 | 5.7684 | 2.4000e-004 | 0.0000 | 5.7743 |
| Vendor | 5.6000e-004 | 0.0227 | 5.8100e-003 | 7.0000e-005 | 1.7100e-003 | 4.0000e-005 | 1.7500e-003 | 5.0000e-004 | 4.0000e-005 | 5.3000e-004 | 0.0000 | 6.4731 | 6.4731 | 2.3000e-004 | 0.0000 | 6.4787 |
| Worker | 1.5200e-003 | 1.0500e-003 | 0.0106 | 3.0000e-005 | 4.1500e-003 | 3.0000e-005 | 4.1800e-003 | 1.1000e-003 | 3.0000e-005 | 1.1300e-003 | 0.0000 | 2.9723 | 2.9723 | 8.0000e-005 | 0.0000 | 2.9743 |
| **Total** | **2.4800e-003** | **0.0387** | **0.0211** | **1.6000e-004** | **7.1900e-003** | **1.1000e-004** | **7.2900e-003** | **1.9600e-003** | **1.1000e-004** | **2.0600e-003** | **0.0000** | **15.2139** | **15.2139** | **5.5000e-004** | **0.0000** | **15.2273** |

## 3.3 Paving - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.4000e-003 | 0.0225 | 0.0383 | 6.0000e-005 | | 1.1000e-003 | 1.1000e-003 | | 1.0100e-003 | 1.0100e-003 | 0.0000 | 5.2551 | 5.2551 | 1.7000e-003 | 0.0000 | 5.2975 |
| Paving | 7.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.1200e-003** | **0.0225** | **0.0383** | **6.0000e-005** | | **1.1000e-003** | **1.1000e-003** | | **1.0100e-003** | **1.0100e-003** | **0.0000** | **5.2551** | **5.2551** | **1.7000e-003** | **0.0000** | **5.2975** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 9.0000e-005 | 3.6500e-003 | 9.3000e-004 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0377 | 1.0377 | 4.0000e-005 | 0.0000 | 1.0386 |
| Worker | 2.4000e-004 | 1.7000e-004 | 1.7000e-003 | 1.0000e-005 | 6.6000e-004 | 0.0000 | 6.7000e-004 | 1.8000e-004 | 0.0000 | 1.8000e-004 | 0.0000 | 0.4765 | 0.4765 | 1.0000e-005 | 0.0000 | 0.4768 |
| **Total** | **3.3000e-004** | **3.8200e-003** | **2.6300e-003** | **2.0000e-005** | **9.3000e-004** | **1.0000e-005** | **9.5000e-004** | **2.6000e-004** | **1.0000e-005** | **2.7000e-004** | **0.0000** | **1.5142** | **1.5142** | **5.0000e-005** | **0.0000** | **1.5154** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.4000e-003 | 0.0225 | 0.0383 | 6.0000e-005 | | 1.1000e-003 | 1.1000e-003 | | 1.0100e-003 | 1.0100e-003 | 0.0000 | 5.2551 | 5.2551 | 1.7000e-003 | 0.0000 | 5.2975 |
| Paving | 7.2000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **3.1200e-003** | **0.0225** | **0.0383** | **6.0000e-005** | | **1.1000e-003** | **1.1000e-003** | | **1.0100e-003** | **1.0100e-003** | **0.0000** | **5.2551** | **5.2551** | **1.7000e-003** | **0.0000** | **5.2975** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 9.0000e-005 | 3.6500e-003 | 9.3000e-004 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0377 | 1.0377 | 4.0000e-005 | 0.0000 | 1.0386 |
| Worker | 2.4000e-004 | 1.7000e-004 | 1.7000e-003 | 1.0000e-005 | 6.6000e-004 | 0.0000 | 6.7000e-004 | 1.8000e-004 | 0.0000 | 1.8000e-004 | 0.0000 | 0.4765 | 0.4765 | 1.0000e-005 | 0.0000 | 0.4768 |
| **Total** | **3.3000e-004** | **3.8200e-003** | **2.6300e-003** | **2.0000e-005** | **9.3000e-004** | **1.0000e-005** | **9.5000e-004** | **2.6000e-004** | **1.0000e-005** | **2.7000e-004** | **0.0000** | **1.5142** | **1.5142** | **5.0000e-005** | **0.0000** | **1.5154** |

## 3.4 Architectural Coating - 2027

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 5.0100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.3900e-003 | 0.0160 | 0.0253 | 4.0000e-005 | | 7.2000e-004 | 7.2000e-004 | | 7.2000e-004 | 7.2000e-004 | 0.0000 | 3.5746 | 3.5746 | 1.9000e-004 | 0.0000 | 3.5794 |
| **Total** | **7.4000e-003** | **0.0160** | **0.0253** | **4.0000e-005** | | **7.2000e-004** | **7.2000e-004** | | **7.2000e-004** | **7.2000e-004** | **0.0000** | **3.5746** | **3.5746** | **1.9000e-004** | **0.0000** | **3.5794** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 9.0000e-005 | 3.6500e-003 | 9.3000e-004 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0377 | 1.0377 | 4.0000e-005 | 0.0000 | 1.0386 |
| Worker | 1.2000e-004 | 8.0000e-005 | 8.5000e-004 | 0.0000 | 3.3000e-004 | 0.0000 | 3.3000e-004 | 9.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2382 | 0.2382 | 1.0000e-005 | 0.0000 | 0.2384 |

| Total | 2.1000e-004 | 3.7300e-003 | 1.7800e-003 | 1.0000e-005 | 6.0000e-004 | 1.0000e-005 | 6.1000e-004 | 1.7000e-004 | 1.0000e-005 | 1.8000e-004 | 0.0000 | 1.2759 | 1.2759 | 5.0000e-005 | 0.0000 | 1.2770 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 5.0100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.3900e-003 | 0.0160 | 0.0253 | 4.0000e-005 | | 7.2000e-004 | 7.2000e-004 | | 7.2000e-004 | 7.2000e-004 | 0.0000 | 3.5746 | 3.5746 | 1.9000e-004 | 0.0000 | 3.5794 |
| **Total** | **7.4000e-003** | **0.0160** | **0.0253** | **4.0000e-005** | | **7.2000e-004** | **7.2000e-004** | | **7.2000e-004** | **7.2000e-004** | **0.0000** | **3.5746** | **3.5746** | **1.9000e-004** | **0.0000** | **3.5794** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 9.0000e-005 | 3.6500e-003 | 9.3000e-004 | 1.0000e-005 | 2.7000e-004 | 1.0000e-005 | 2.8000e-004 | 8.0000e-005 | 1.0000e-005 | 9.0000e-005 | 0.0000 | 1.0377 | 1.0377 | 4.0000e-005 | 0.0000 | 1.0386 |
| Worker | 1.2000e-004 | 8.0000e-005 | 8.5000e-004 | 0.0000 | 3.3000e-004 | 0.0000 | 3.3000e-004 | 9.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2382 | 0.2382 | 1.0000e-005 | 0.0000 | 0.2384 |
| **Total** | **2.1000e-004** | **3.7300e-003** | **1.7800e-003** | **1.0000e-005** | **6.0000e-004** | **1.0000e-005** | **6.1000e-004** | **1.7000e-004** | **1.0000e-005** | **1.8000e-004** | **0.0000** | **1.2759** | **1.2759** | **5.0000e-005** | **0.0000** | **1.2770** |

## 3.5 Testing - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.7000e-004 | 5.9900e-003 | 9.1500e-003 | 2.0000e-005 | | 2.4000e-004 | 2.4000e-004 | | 2.4000e-004 | 2.4000e-004 | 0.0000 | 1.4130 | 1.4130 | 5.0000e-005 | 0.0000 | 1.4143 |
| **Total** | **6.7000e-004** | **5.9900e-003** | **9.1500e-003** | **2.0000e-005** | | **2.4000e-004** | **2.4000e-004** | | **2.4000e-004** | **2.4000e-004** | **0.0000** | **1.4130** | **1.4130** | **5.0000e-005** | **0.0000** | **1.4143** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.0000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0851 | 0.0851 | 0.0000 | 0.0000 | 0.0851 |
| **Total** | **4.0000e-005** | **3.0000e-005** | **3.0000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0851** | **0.0851** | **0.0000** | **0.0000** | **0.0851** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 6.7000e-004 | 5.9900e-003 | 9.1500e-003 | 2.0000e-005 | | 2.4000e-004 | 2.4000e-004 | | 2.4000e-004 | 2.4000e-004 | 0.0000 | 1.4130 | 1.4130 | 5.0000e-005 | 0.0000 | 1.4143 |
| **Total** | **6.7000e-004** | **5.9900e-003** | **9.1500e-003** | **2.0000e-005** | | **2.4000e-004** | **2.4000e-004** | | **2.4000e-004** | **2.4000e-004** | **0.0000** | **1.4130** | **1.4130** | **5.0000e-005** | **0.0000** | **1.4143** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.0000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0851 | 0.0851 | 0.0000 | 0.0000 | 0.0851 |
| **Total** | **4.0000e-005** | **3.0000e-005** | **3.0000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0851** | **0.0851** | **0.0000** | **0.0000** | **0.0851** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |
| Other Asphalt Surfaces | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| Unmitigated | 2.0800e-003 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 5.0000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 1.5500e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 3.0000e-005 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| **Total** | **2.0800e-003** | **0.0000** | **3.1000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.0000** | **6.3000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 5.0000e-004 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 1.5500e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 3.0000e-005 | 0.0000 | 3.1000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 6.0000e-004 | 6.0000e-004 | 0.0000 | 0.0000 | 6.3000e-004 |
| **Total** | **2.0800e-003** | **0.0000** | **3.1000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **6.0000e-004** | **6.0000e-004** | **0.0000** | **0.0000** | **6.3000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Intertie Connection City-SVWD/SLVWD

**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 24.00 | 1000sqft | 0.55 | 24,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intertie Connection City-SVWD/SLVWD

Land Use - Surrogate land use for intertie connection

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Estimated 1,267 CY of excavated material for export and 0.5 acre total graded

Trips and VMT - Construction vehicle information based on City input

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|

| | | | |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 131.00 |
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | PhaseEndDate | 10/20/2027 | 11/10/2027 |
| tblConstructionPhase | PhaseEndDate | 10/6/2027 | 11/17/2027 |
| tblConstructionPhase | PhaseEndDate | 10/13/2027 | 11/10/2027 |
| tblConstructionPhase | PhaseStartDate | 10/14/2027 | 10/13/2027 |
| tblConstructionPhase | PhaseStartDate | 5/20/2027 | 11/11/2027 |
| tblConstructionPhase | PhaseStartDate | 10/7/2027 | 10/13/2027 |
| tblGrading | AcresOfGrading | 65.50 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 1,267.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 4.00 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 2.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 1.8325 | 12.3144 | 16.1128 | 0.0330 | 0.2710 | 0.4560 | 0.7270 | 0.0731 | 0.4251 | 0.4982 | 0.0000 | 3,230.2466 | 3,230.2466 | 0.7816 | 0.0000 | 3,249.7854 |
| **Maximum** | **1.8325** | **12.3144** | **16.1128** | **0.0330** | **0.2710** | **0.4560** | **0.7270** | **0.0731** | **0.4251** | **0.4982** | **0.0000** | **3,230.2466** | **3,230.2466** | **0.7816** | **0.0000** | **3,249.7854** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2027 | 1.8325 | 12.3144 | 16.1128 | 0.0330 | 0.2683 | 0.4560 | 0.7243 | 0.0728 | 0.4251 | 0.4979 | 0.0000 | 3,230.2466 | 3,230.2466 | 0.7816 | 0.0000 | 3,249.7854 |
| **Maximum** | **1.8325** | **12.3144** | **16.1128** | **0.0330** | **0.2683** | **0.4560** | **0.7243** | **0.0728** | **0.4251** | **0.4979** | **0.0000** | **3,230.2466** | **3,230.2466** | **0.7816** | **0.0000** | **3,249.7854** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.99** | **0.00** | **0.37** | **0.42** | **0.00** | **0.06** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.5900e-003** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.5900e-003** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Pipeline installation | Grading | 5/2/2027 | 11/1/2027 | 5 | 131 | |
| 2 | Paving | Paving | 10/13/2027 | 11/10/2027 | 5 | 21 | |
| 3 | Architectural Coating | Architectural Coating | 10/13/2027 | 11/10/2027 | 5 | 21 | |
| 4 | Testing | Building Construction | 11/11/2027 | 11/17/2027 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.55**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,440**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Paving | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Pipeline installation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Pipeline installation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Pipeline installation | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

| | | | | | |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 4.00 | 130 | 0.42 |
| Paving | Rollers | 1 | 4.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Pipeline Installation | Graders | 1 | 8.00 | 187 | 0.41 |
| Pipeline Installation | Excavators | 1 | 8.00 | 158 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pipeline installation | 4 | 8.00 | 4.00 | 158.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 3 | 8.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Pipeline installation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.8900e-003 | 0.0000 | 4.8900e-003 | 5.6000e-004 | 0.0000 | 5.6000e-004 | | | 0.0000 | | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.7425 | 7.3485 | 9.3128 | 0.0180 | | 0.2793 | 0.2793 | | 0.2570 | 0.2570 | | 1,744.6892 | 1,744.6892 | 0.5643 | | 1,758.7959 |
| **Total** | **0.7425** | **7.3485** | **9.3128** | **0.0180** | **4.8900e-003** | **0.2793** | **0.2842** | **5.6000e-004** | **0.2570** | **0.2576** | | **1,744.6892** | **1,744.6892** | **0.5643** | | **1,758.7959** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.9900e-003 | 0.2239 | 0.0701 | 9.1000e-004 | 0.0209 | 5.8000e-004 | 0.0215 | 5.7100e-003 | 5.6000e-004 | 6.2700e-003 | | 97.6525 | 97.6525 | 3.9000e-003 | | 97.7501 |
| Vendor | 8.3900e-003 | 0.3447 | 0.0838 | 1.0400e-003 | 0.0270 | 5.6000e-004 | 0.0275 | 7.7600e-003 | 5.4000e-004 | 8.3000e-003 | | 109.9372 | 109.9372 | 3.6900e-003 | | 110.0294 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0371** | **0.5827** | **0.3226** | **2.4800e-003** | **0.1136** | **1.5700e-003** | **0.1152** | **0.0309** | **1.5000e-003** | **0.0324** | | **260.0469** | **260.0469** | **8.9600e-003** | | **260.2709** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.2000e-003 | 0.0000 | 2.2000e-003 | 2.5000e-004 | 0.0000 | 2.5000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7425 | 7.3485 | 9.3128 | 0.0180 | | 0.2793 | 0.2793 | | 0.2570 | 0.2570 | 0.0000 | 1,744.6892 | 1,744.6892 | 0.5643 | | 1,758.7959 |
| **Total** | **0.7425** | **7.3485** | **9.3128** | **0.0180** | **2.2000e-003** | **0.2793** | **0.2815** | **2.5000e-004** | **0.2570** | **0.2572** | **0.0000** | **1,744.6892** | **1,744.6892** | **0.5643** | | **1,758.7959** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.9900e-003 | 0.2239 | 0.0701 | 9.1000e-004 | 0.0209 | 5.8000e-004 | 0.0215 | 5.7100e-003 | 5.6000e-004 | 6.2700e-003 | | 97.6525 | 97.6525 | 3.9000e-003 | | 97.7501 |
| Vendor | 8.3900e-003 | 0.3447 | 0.0838 | 1.0400e-003 | 0.0270 | 5.6000e-004 | 0.0275 | 7.7600e-003 | 5.4000e-004 | 8.3000e-003 | | 109.9372 | 109.9372 | 3.6900e-003 | | 110.0294 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0371** | **0.5827** | **0.3226** | **2.4800e-003** | **0.1136** | **1.5700e-003** | **0.1152** | **0.0309** | **1.5000e-003** | **0.0324** | | **260.0469** | **260.0469** | **8.9600e-003** | | **260.2709** |

### 3.3 Paving - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2288 | 2.1454 | 3.6445 | 5.7000e-003 | | 0.1046 | 0.1046 | | 0.0963 | 0.0963 | | 551.6863 | 551.6863 | 0.1784 | | 556.1470 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2974** | **2.1454** | **3.6445** | **5.7000e-003** | | **0.1046** | **0.1046** | | **0.0963** | **0.0963** | | **551.6863** | **551.6863** | **0.1784** | | **556.1470** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 8.3900e-003 | 0.3447 | 0.0838 | 1.0400e-003 | 0.0270 | 5.6000e-004 | 0.0275 | 7.7600e-003 | 5.4000e-004 | 8.3000e-003 | | 109.9372 | 109.9372 | 3.6900e-003 | | 110.0294 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0311** | **0.3588** | **0.2526** | **1.5700e-003** | **0.0927** | **9.9000e-004** | **0.0937** | **0.0252** | **9.4000e-004** | **0.0261** | | **162.3944** | **162.3944** | **5.0600e-003** | | **162.5208** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2288 | 2.1454 | 3.6445 | 5.7000e-003 | | 0.1046 | 0.1046 | | 0.0963 | 0.0963 | 0.0000 | 551.6863 | 551.6863 | 0.1784 | | 556.1470 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2974** | **2.1454** | **3.6445** | **5.7000e-003** | | **0.1046** | **0.1046** | | **0.0963** | **0.0963** | **0.0000** | **551.6863** | **551.6863** | **0.1784** | | **556.1470** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 8.3900e-003 | 0.3447 | 0.0838 | 1.0400e-003 | 0.0270 | 5.6000e-004 | 0.0275 | 7.7600e-003 | 5.4000e-004 | 8.3000e-003 | | 109.9372 | 109.9372 | 3.6900e-003 | | 110.0294 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0311** | **0.3588** | **0.2526** | **1.5700e-003** | **0.0927** | **9.9000e-004** | **0.0937** | **0.0252** | **9.4000e-004** | **0.0261** | | **162.3944** | **162.3944** | **5.0600e-003** | | **162.5208** |

# 3.4 Architectural Coating - 2027

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **0.7046** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 8.3900e-003 | 0.3447 | 0.0838 | 1.0400e-003 | 0.0270 | 5.6000e-004 | 0.0275 | 7.7600e-003 | 5.4000e-004 | 8.3000e-003 | | 109.9372 | 109.9372 | 3.6900e-003 | | 110.0294 |
| Worker | 0.0114 | 7.0200e-003 | 0.0844 | 2.6000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 26.2286 | 26.2286 | 6.8000e-004 | | 26.2457 |
| **Total** | **0.0198** | **0.3517** | **0.1682** | **1.3000e-003** | **0.0598** | **7.8000e-004** | **0.0606** | **0.0165** | **7.4000e-004** | **0.0172** | | **136.1658** | **136.1658** | **4.3700e-003** | | **136.2751** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | 0.0000 | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **0.7046** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | **0.0000** | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 8.3900e-003 | 0.3447 | 0.0838 | 1.0400e-003 | 0.0270 | 5.6000e-004 | 0.0275 | 7.7600e-003 | 5.4000e-004 | 8.3000e-003 | | 109.9372 | 109.9372 | 3.6900e-003 | | 110.0294 |
| Worker | 0.0114 | 7.0200e-003 | 0.0844 | 2.6000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 26.2286 | 26.2286 | 6.8000e-004 | | 26.2457 |
| **Total** | **0.0198** | **0.3517** | **0.1682** | **1.3000e-003** | **0.0598** | **7.8000e-004** | **0.0606** | **0.0165** | **7.4000e-004** | **0.0172** | | **136.1658** | **136.1658** | **4.3700e-003** | | **136.2751** |

## 3.5 Testing - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0171 | 0.0105 | 0.1266 | 3.9000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 39.3429 | 39.3429 | 1.0300e-003 | | 39.3685 |
| **Total** | **0.0171** | **0.0105** | **0.1266** | **3.9000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **39.3429** | **39.3429** | **1.0300e-003** | | **39.3685** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | 0.0000 | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | **0.0000** | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0171 | 0.0105 | 0.1266 | 3.9000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 39.3429 | 39.3429 | 1.0300e-003 | | 39.3685 |
| **Total** | **0.0171** | **0.0105** | **0.1266** | **3.9000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **39.3429** | **39.3429** | **1.0300e-003** | | **39.3685** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |
| Other Asphalt Surfaces | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| Unmitigated | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.5900e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.5900e-003** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Intertie Connection City-SVWD/SLVWD
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 1000sqft | 0.00 | 0.00 | 0 |
| Other Asphalt Surfaces | 24.00 | 1000sqft | 0.55 | 24,000.00 | 0 |

### 1.2 Other Project Characteristics

**Urbanization** Urban **Wind Speed (m/s)** 1.8 **Precipitation Freq (Days)** 61

**Climate Zone** 5 **Operational Year** 2028

**Utility Company** Pacific Gas & Electric Company

**CO2 Intensity (lb/MWhr)** 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intertie Connection City-SVWD/SLVWD

Land Use - Surrogate land use for intertie connection

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Estimated 1,267 CY of excavated material for export and 0.5 acre total graded

Trips and VMT - Construction vehicle information based on City input

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|

| | | | |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 2.00 | 131.00 |
| tblConstructionPhase | NumDays | 5.00 | 21.00 |
| tblConstructionPhase | PhaseEndDate | 10/20/2027 | 11/10/2027 |
| tblConstructionPhase | PhaseEndDate | 10/6/2027 | 11/17/2027 |
| tblConstructionPhase | PhaseEndDate | 10/13/2027 | 11/10/2027 |
| tblConstructionPhase | PhaseStartDate | 10/14/2027 | 10/13/2027 |
| tblConstructionPhase | PhaseStartDate | 5/20/2027 | 11/11/2027 |
| tblConstructionPhase | PhaseStartDate | 10/7/2027 | 10/13/2027 |
| tblGrading | AcresOfGrading | 65.50 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 1,267.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Paving Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Graders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | UsageHours | 7.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 4.00 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 2.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 1.8420 | 12.3290 | 16.1464 | 0.0329 | 0.2710 | 0.4561 | 0.7271 | 0.0731 | 0.4252 | 0.4983 | 0.0000 | 3,215.5457 | 3,215.5457 | 0.7823 | 0.0000 | 3,235.1014 |
| **Maximum** | **1.8420** | **12.3290** | **16.1464** | **0.0329** | **0.2710** | **0.4561** | **0.7271** | **0.0731** | **0.4252** | **0.4983** | **0.0000** | **3,215.5457** | **3,215.5457** | **0.7823** | **0.0000** | **3,235.1014** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Year | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2027 | 1.8420 | 12.3290 | 16.1464 | 0.0329 | 0.2683 | 0.4561 | 0.7244 | 0.0728 | 0.4252 | 0.4980 | 0.0000 | 3,215.5457 | 3,215.5457 | 0.7823 | 0.0000 | 3,235.1014 |
| **Maximum** | **1.8420** | **12.3290** | **16.1464** | **0.0329** | **0.2683** | **0.4561** | **0.7244** | **0.0728** | **0.4252** | **0.4980** | **0.0000** | **3,215.5457** | **3,215.5457** | **0.7823** | **0.0000** | **3,235.1014** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.99** | **0.00** | **0.37** | **0.42** | **0.00** | **0.06** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.5900e-003** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | **0.0000** | **1.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | **0.0000** | **5.5900e-003** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Pipeline installation | Grading | 5/2/2027 | 11/1/2027 | 5 | 131 | |
| 2 | Paving | Paving | 10/13/2027 | 11/10/2027 | 5 | 21 | |
| 3 | Architectural Coating | Architectural Coating | 10/13/2027 | 11/10/2027 | 5 | 21 | |
| 4 | Testing | Building Construction | 11/11/2027 | 11/17/2027 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.55**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,440**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Paving | Paving Equipment | 1 | 4.00 | 132 | 0.36 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Pipeline installation | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Pipeline installation | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Pipeline installation | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

| | | | | | |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 4.00 | 130 | 0.42 |
| Paving | Rollers | 1 | 4.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Pipeline Installation | Graders | 1 | 8.00 | 187 | 0.41 |
| Pipeline Installation | Excavators | 1 | 8.00 | 158 | 0.38 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Pipeline installation | 4 | 8.00 | 4.00 | 158.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 3 | 8.00 | 4.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Pipeline installation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.8900e-003 | 0.0000 | 4.8900e-003 | 5.6000e-004 | 0.0000 | 5.6000e-004 | | | 0.0000 | | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.7425 | 7.3485 | 9.3128 | 0.0180 | | 0.2793 | 0.2793 | | 0.2570 | 0.2570 | | 1,744.6892 | 1,744.6892 | 0.5643 | | 1,758.7959 |
| **Total** | **0.7425** | **7.3485** | **9.3128** | **0.0180** | **4.8900e-003** | **0.2793** | **0.2842** | **5.6000e-004** | **0.2570** | **0.2576** | | **1,744.6892** | **1,744.6892** | **0.5643** | | **1,758.7959** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 6.1600e-003 | 0.2270 | 0.0732 | 9.0000e-004 | 0.0209 | 6.0000e-004 | 0.0215 | 5.7100e-003 | 5.7000e-004 | 6.2900e-003 | | 96.2846 | 96.2846 | 4.0200e-003 | | 96.3851 |
| Vendor | 8.9200e-003 | 0.3457 | 0.0943 | 1.0100e-003 | 0.0270 | 5.9000e-004 | 0.0276 | 7.7600e-003 | 5.7000e-004 | 8.3300e-003 | | 107.5574 | 107.5574 | 3.9300e-003 | | 107.6555 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0410** | **0.5902** | **0.3359** | **2.4100e-003** | **0.1136** | **1.6200e-003** | **0.1152** | **0.0309** | **1.5400e-003** | **0.0325** | | **253.8217** | **253.8217** | **9.2600e-003** | | **254.0530** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.2000e-003 | 0.0000 | 2.2000e-003 | 2.5000e-004 | 0.0000 | 2.5000e-004 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7425 | 7.3485 | 9.3128 | 0.0180 | | 0.2793 | 0.2793 | | 0.2570 | 0.2570 | 0.0000 | 1,744.6892 | 1,744.6892 | 0.5643 | | 1,758.7959 |
| **Total** | **0.7425** | **7.3485** | **9.3128** | **0.0180** | **2.2000e-003** | **0.2793** | **0.2815** | **2.5000e-004** | **0.2570** | **0.2572** | **0.0000** | **1,744.6892** | **1,744.6892** | **0.5643** | | **1,758.7959** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 6.1600e-003 | 0.2270 | 0.0732 | 9.0000e-004 | 0.0209 | 6.0000e-004 | 0.0215 | 5.7100e-003 | 5.7000e-004 | 6.2900e-003 | | 96.2846 | 96.2846 | 4.0200e-003 | | 96.3851 |
| Vendor | 8.9200e-003 | 0.3457 | 0.0943 | 1.0100e-003 | 0.0270 | 5.9000e-004 | 0.0276 | 7.7600e-003 | 5.7000e-004 | 8.3300e-003 | | 107.5574 | 107.5574 | 3.9300e-003 | | 107.6555 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0410** | **0.5902** | **0.3359** | **2.4100e-003** | **0.1136** | **1.6200e-003** | **0.1152** | **0.0309** | **1.5400e-003** | **0.0325** | | **253.8217** | **253.8217** | **9.2600e-003** | | **254.0530** |

## 3.3 Paving - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2288 | 2.1454 | 3.6445 | 5.7000e-003 | | 0.1046 | 0.1046 | | 0.0963 | 0.0963 | | 551.6863 | 551.6863 | 0.1784 | | 556.1470 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2974** | **2.1454** | **3.6445** | **5.7000e-003** | | **0.1046** | **0.1046** | | **0.0963** | **0.0963** | | **551.6863** | **551.6863** | **0.1784** | | **556.1470** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 8.9200e-003 | 0.3457 | 0.0943 | 1.0100e-003 | 0.0270 | 5.9000e-004 | 0.0276 | 7.7600e-003 | 5.7000e-004 | 8.3300e-003 | | 107.5574 | 107.5574 | 3.9300e-003 | | 107.6555 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0348** | **0.3632** | **0.2626** | **1.5100e-003** | **0.0927** | **1.0200e-003** | **0.0937** | **0.0252** | **9.7000e-004** | **0.0262** | | **157.5372** | **157.5372** | **5.2400e-003** | | **157.6680** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2288 | 2.1454 | 3.6445 | 5.7000e-003 | | 0.1046 | 0.1046 | | 0.0963 | 0.0963 | 0.0000 | 551.6863 | 551.6863 | 0.1784 | | 556.1470 |
| Paving | 0.0686 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2974** | **2.1454** | **3.6445** | **5.7000e-003** | | **0.1046** | **0.1046** | | **0.0963** | **0.0963** | **0.0000** | **551.6863** | **551.6863** | **0.1784** | | **556.1470** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 8.9200e-003 | 0.3457 | 0.0943 | 1.0100e-003 | 0.0270 | 5.9000e-004 | 0.0276 | 7.7600e-003 | 5.7000e-004 | 8.3300e-003 | | 107.5574 | 107.5574 | 3.9300e-003 | | 107.6555 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0348** | **0.3632** | **0.2626** | **1.5100e-003** | **0.0927** | **1.0200e-003** | **0.0937** | **0.0252** | **9.7000e-004** | **0.0262** | | **157.5372** | **157.5372** | **5.2400e-003** | | **157.6680** |

## 3.4 Architectural Coating - 2027

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **0.7046** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 8.9200e-003 | 0.3457 | 0.0943 | 1.0100e-003 | 0.0270 | 5.9000e-004 | 0.0276 | 7.7600e-003 | 5.7000e-004 | 8.3300e-003 | | 107.5574 | 107.5574 | 3.9300e-003 | | 107.6555 |
| Worker | 0.0129 | 8.7400e-003 | 0.0842 | 2.5000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 24.9899 | 24.9899 | 6.5000e-004 | | 25.0062 |
| **Total** | **0.0219** | **0.3544** | **0.1785** | **1.2600e-003** | **0.0598** | **8.1000e-004** | **0.0606** | **0.0165** | **7.7000e-004** | **0.0172** | | **132.5473** | **132.5473** | **4.5800e-003** | | **132.6617** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 0.4767 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | 0.0000 | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **0.7046** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | **0.0000** | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 8.9200e-003 | 0.3457 | 0.0943 | 1.0100e-003 | 0.0270 | 5.9000e-004 | 0.0276 | 7.7600e-003 | 5.7000e-004 | 8.3300e-003 | | 107.5574 | 107.5574 | 3.9300e-003 | | 107.6555 |
| Worker | 0.0129 | 8.7400e-003 | 0.0842 | 2.5000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 24.9899 | 24.9899 | 6.5000e-004 | | 25.0062 |
| **Total** | **0.0219** | **0.3544** | **0.1785** | **1.2600e-003** | **0.0598** | **8.1000e-004** | **0.0606** | **0.0165** | **7.7000e-004** | **0.0172** | | **132.5473** | **132.5473** | **4.5800e-003** | | **132.6617** |

## 3.5 Testing - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0194 | 0.0131 | 0.1263 | 3.8000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 37.4848 | 37.4848 | 9.8000e-004 | | 37.5093 |
| **Total** | **0.0194** | **0.0131** | **0.1263** | **3.8000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **37.4848** | **37.4848** | **9.8000e-004** | | **37.5093** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | 0.0000 | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | **0.0000** | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0194 | 0.0131 | 0.1263 | 3.8000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 37.4848 | 37.4848 | 9.8000e-004 | | 37.5093 |
| **Total** | **0.0194** | **0.0131** | **0.1263** | **3.8000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **37.4848** | **37.4848** | **9.8000e-004** | | **37.5093** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |
| Other Asphalt Surfaces | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| Unmitigated | 0.0115 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.5900e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 2.7400e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 8.5000e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3000e-004 | 2.0000e-005 | 2.4400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 5.2500e-003 | 5.2500e-003 | 1.0000e-005 | | 5.5900e-003 |
| **Total** | **0.0115** | **2.0000e-005** | **2.4400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **5.2500e-003** | **5.2500e-003** | **1.0000e-005** | | **5.5900e-003** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station SCWD-SVWD
**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - New pump station for SCWD-SVWD intertie

Land Use - Pump station assumed to be 2 ksf

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Assuming 0.05 acres would be graded for pump station

Trips and VMT - Construction vehicle information based on City input

Architectural Coating - Default architectural coating EF

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 5/17/2027 | 5/7/2027 |
| tblConstructionPhase | PhaseEndDate | 10/6/2027 | 5/28/2027 |
| tblConstructionPhase | PhaseEndDate | 10/13/2027 | 6/11/2027 |
| tblConstructionPhase | PhaseEndDate | 10/20/2027 | 6/4/2027 |
| tblConstructionPhase | PhaseStartDate | 5/15/2027 | 5/2/2027 |
| tblConstructionPhase | PhaseStartDate | 5/20/2027 | 5/9/2027 |
| tblConstructionPhase | PhaseStartDate | 10/7/2027 | 6/6/2027 |
| tblConstructionPhase | PhaseStartDate | 10/14/2027 | 5/30/2027 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.05 |
| tblOffRoadEquipment | LoadFactor | 0.40 | 0.40 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 3.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2027 | 0.0316 | 0.1571 | 0.2224 | 3.9000e-004 | 0.0163 | 6.1800e-003 | 0.0225 | 8.6100e-003 | 6.0000e-003 | 0.0146 | 0.0000 | 33.6553 | 33.6553 | 4.1600e-003 | 0.0000 | 33.7592 |
| **Maximum** | **0.0316** | **0.1571** | **0.2224** | **3.9000e-004** | **0.0163** | **6.1800e-003** | **0.0225** | **8.6100e-003** | **6.0000e-003** | **0.0146** | **0.0000** | **33.6553** | **33.6553** | **4.1600e-003** | **0.0000** | **33.7592** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2027 | 0.0316 | 0.1571 | 0.2224 | 3.9000e-004 | 8.0100e-003 | 6.1800e-003 | 0.0142 | 4.0600e-003 | 6.0000e-003 | 0.0101 | 0.0000 | 33.6552 | 33.6552 | 4.1600e-003 | 0.0000 | 33.7592 |
| **Maximum** | **0.0316** | **0.1571** | **0.2224** | **3.9000e-004** | **8.0100e-003** | **6.1800e-003** | **0.0142** | **4.0600e-003** | **6.0000e-003** | **0.0101** | **0.0000** | **33.6552** | **33.6552** | **4.1600e-003** | **0.0000** | **33.7592** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **50.89** | **0.00** | **36.91** | **52.85** | **0.00** | **31.21** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| 1 | 5-2-2027 | 8-1-2027 | 0.1749 | 0.1749 |
| | | Highest | 0.1749 | 0.1749 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/2/2027 | 5/7/2027 | 5 | 5 | |
| 2 | Building Construction | Building Construction | 5/9/2027 | 5/28/2027 | 5 | 15 | |
| 3 | Architectural Coating | Architectural Coating | 5/30/2027 | 6/4/2027 | 5 | 5 | |
| 4 | Paving | Paving | 6/6/2027 | 6/11/2027 | 5 | 5 | |
| 5 | Testing | Building Construction | 6/13/2027 | 6/25/2027 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0.05**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Site Preparation | Rubber Tired Dozers | | 1 | 8.00 | 247 | 0.40 |
| Building Construction | Aerial Lifts | | 1 | 8.00 | 63 | 0.31 |
| Building Construction | Cement and Mortar Mixers | | 1 | 8.00 | 9 | 0.56 |
| Building Construction | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Building Construction | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | | 0 | 0.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Building Construction | Generator Sets | | 4 | 8.00 | 84 | 0.74 |
| Building Construction | Welders | | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0151 | 0.0000 | 0.0151 | 8.2800e-003 | 0.0000 | 8.2800e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.9300e-003 | 0.0197 | 0.0130 | 3.0000e-005 | | 8.5000e-004 | 8.5000e-004 | | 7.8000e-004 | 7.8000e-004 | 0.0000 | 2.5385 | 2.5385 | 8.2000e-004 | 0.0000 | 2.5591 |
| **Total** | **1.9300e-003** | **0.0197** | **0.0130** | **3.0000e-005** | **0.0151** | **8.5000e-004** | **0.0159** | **8.2800e-003** | **7.8000e-004** | **9.0600e-003** | **0.0000** | **2.5385** | **2.5385** | **8.2000e-004** | **0.0000** | **2.5591** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 6.0000e-005 | 4.0000e-005 | 4.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1135 | 0.1135 | 0.0000 | 0.0000 | 0.1135 |
| **Total** | **7.0000e-005** | **4.7000e-004** | **5.2000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2370** | **0.2370** | **0.0000** | **0.0000** | **0.2372** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 6.7900e-003 | 0.0000 | 6.7900e-003 | 3.7300e-003 | 0.0000 | 3.7300e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.9300e-003 | 0.0197 | 0.0130 | 3.0000e-005 | | 8.5000e-004 | 8.5000e-004 | | 7.8000e-004 | 7.8000e-004 | 0.0000 | 2.5385 | 2.5385 | 8.2000e-004 | 0.0000 | 2.5591 |

| Total | 1.9300e-003 | 0.0197 | 0.0130 | 3.0000e-005 | 6.7900e-003 | 8.5000e-004 | 7.6400e-003 | 3.7300e-003 | 7.8000e-004 | 4.5100e-003 | 0.0000 | 2.5385 | 2.5385 | 8.2000e-004 | 0.0000 | 2.5591 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 6.0000e-005 | 4.0000e-005 | 4.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1135 | 0.1135 | 0.0000 | 0.0000 | 0.1135 |
| **Total** | **7.0000e-005** | **4.7000e-004** | **5.2000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2370** | **0.2370** | **0.0000** | **0.0000** | **0.2372** |

## 3.3 Building Construction - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0130 | 0.1147 | 0.1746 | 2.9000e-004 | | 4.4800e-003 | 4.4800e-003 | | 4.3900e-003 | 4.3900e-003 | 0.0000 | 24.9291 | 24.9291 | 2.8100e-003 | 0.0000 | 24.9993 |
| **Total** | **0.0130** | **0.1147** | **0.1746** | **2.9000e-004** | | **4.4800e-003** | **4.4800e-003** | | **4.3900e-003** | **4.3900e-003** | **0.0000** | **24.9291** | **24.9291** | **2.8100e-003** | **0.0000** | **24.9993** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.0000e-005 | 1.3000e-003 | 3.3000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.3706 | 0.3706 | 1.0000e-005 | 0.0000 | 0.3709 |
| Worker | 1.7000e-004 | 1.2000e-004 | 1.2200e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3403 | 0.3403 | 1.0000e-005 | 0.0000 | 0.3406 |
| **Total** | **2.0000e-004** | **1.4200e-003** | **1.5500e-003** | **0.0000** | **5.7000e-004** | **0.0000** | **5.8000e-004** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **0.7109** | **0.7109** | **2.0000e-005** | **0.0000** | **0.7115** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0130 | 0.1147 | 0.1746 | 2.9000e-004 | | 4.4800e-003 | 4.4800e-003 | | 4.3900e-003 | 4.3900e-003 | 0.0000 | 24.9291 | 24.9291 | 2.8100e-003 | 0.0000 | 24.9993 |
| **Total** | **0.0130** | **0.1147** | **0.1746** | **2.9000e-004** | | **4.4800e-003** | **4.4800e-003** | | **4.3900e-003** | **4.3900e-003** | **0.0000** | **24.9291** | **24.9291** | **2.8100e-003** | **0.0000** | **24.9993** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.0000e-005 | 1.3000e-003 | 3.3000e-004 | 0.0000 | 1.0000e-004 | 0.0000 | 1.0000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.3706 | 0.3706 | 1.0000e-005 | 0.0000 | 0.3709 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 1.7000e-004 | 1.2000e-004 | 1.2200e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3403 | 0.3403 | 1.0000e-005 | 0.0000 | 0.3406 |
| **Total** | **2.0000e-004** | **1.4200e-003** | **1.5500e-003** | **0.0000** | **5.7000e-004** | **0.0000** | **5.8000e-004** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **0.7109** | **0.7109** | **2.0000e-005** | **0.0000** | **0.7115** |

## 3.4 Architectural Coating - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0139 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 5.7000e-004 | 3.8200e-003 | 6.0300e-003 | 1.0000e-005 | | 1.7000e-004 | 1.7000e-004 | | 1.7000e-004 | 1.7000e-004 | 0.0000 | 0.8511 | 0.8511 | 5.0000e-005 | 0.0000 | 0.8523 |
| **Total** | **0.0145** | **3.8200e-003** | **6.0300e-003** | **1.0000e-005** | | **1.7000e-004** | **1.7000e-004** | | **1.7000e-004** | **1.7000e-004** | **0.0000** | **0.8511** | **0.8511** | **5.0000e-005** | **0.0000** | **0.8523** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 3.0000e-005 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0567 | 0.0567 | 0.0000 | 0.0000 | 0.0568 |
| **Total** | **4.0000e-005** | **4.5000e-004** | **3.1000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1803** | **0.1803** | **0.0000** | **0.0000** | **0.1804** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0139 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 5.7000e-004 | 3.8200e-003 | 6.0300e-003 | 1.0000e-005 | | 1.7000e-004 | 1.7000e-004 | | 1.7000e-004 | 1.7000e-004 | 0.0000 | 0.8511 | 0.8511 | 5.0000e-005 | 0.0000 | 0.8522 |
| **Total** | **0.0145** | **3.8200e-003** | **6.0300e-003** | **1.0000e-005** | | **1.7000e-004** | **1.7000e-004** | | **1.7000e-004** | **1.7000e-004** | **0.0000** | **0.8511** | **0.8511** | **5.0000e-005** | **0.0000** | **0.8522** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 3.0000e-005 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0567 | 0.0567 | 0.0000 | 0.0000 | 0.0568 |
| **Total** | **4.0000e-005** | **4.5000e-004** | **3.1000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1803** | **0.1803** | **0.0000** | **0.0000** | **0.1804** |

## 3.5 Paving - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.3000e-004 | 3.9600e-003 | 7.2400e-003 | 1.0000e-005 | | 1.9000e-004 | 1.9000e-004 | | 1.7000e-004 | 1.7000e-004 | 0.0000 | 1.0319 | 1.0319 | 3.3000e-004 | 0.0000 | 1.0403 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **4.3000e-004** | **3.9600e-003** | **7.2400e-003** | **1.0000e-005** | | **1.9000e-004** | **1.9000e-004** | | **1.7000e-004** | **1.7000e-004** | **0.0000** | **1.0319** | **1.0319** | **3.3000e-004** | **0.0000** | **1.0403** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 3.0000e-005 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0567 | 0.0567 | 0.0000 | 0.0000 | 0.0568 |
| **Total** | **4.0000e-005** | **4.5000e-004** | **3.1000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1803** | **0.1803** | **0.0000** | **0.0000** | **0.1804** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.3000e-004 | 3.9600e-003 | 7.2400e-003 | 1.0000e-005 | | 1.9000e-004 | 1.9000e-004 | | 1.7000e-004 | 1.7000e-004 | 0.0000 | 1.0319 | 1.0319 | 3.3000e-004 | 0.0000 | 1.0403 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **4.3000e-004** | **3.9600e-003** | **7.2400e-003** | **1.0000e-005** | | **1.9000e-004** | **1.9000e-004** | | **1.7000e-004** | **1.7000e-004** | **0.0000** | **1.0319** | **1.0319** | **3.3000e-004** | **0.0000** | **1.0403** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 3.0000e-005 | 2.0000e-005 | 2.0000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0567 | 0.0567 | 0.0000 | 0.0000 | 0.0568 |
| **Total** | **4.0000e-005** | **4.5000e-004** | **3.1000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1803** | **0.1803** | **0.0000** | **0.0000** | **0.1804** |

## 3.6 Testing - 2027

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3300e-003 | 0.0120 | 0.0183 | 3.0000e-005 | | 4.8000e-004 | 4.8000e-004 | | 4.8000e-004 | 4.8000e-004 | 0.0000 | 2.8260 | 2.8260 | 1.0000e-004 | 0.0000 | 2.8287 |
| **Total** | **1.3300e-003** | **0.0120** | **0.0183** | **3.0000e-005** | | **4.8000e-004** | **4.8000e-004** | | **4.8000e-004** | **4.8000e-004** | **0.0000** | **2.8260** | **2.8260** | **1.0000e-004** | **0.0000** | **2.8287** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 9.0000e-005 | 6.0000e-005 | 6.1000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.1702 | 0.1702 | 0.0000 | 0.0000 | 0.1703 |
| **Total** | **9.0000e-005** | **6.0000e-005** | **6.1000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.1702** | **0.1702** | **0.0000** | **0.0000** | **0.1703** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3300e-003 | 0.0120 | 0.0183 | 3.0000e-005 | | 4.8000e-004 | 4.8000e-004 | | 4.8000e-004 | 4.8000e-004 | 0.0000 | 2.8260 | 2.8260 | 1.0000e-004 | 0.0000 | 2.8286 |
| **Total** | **1.3300e-003** | **0.0120** | **0.0183** | **3.0000e-005** | | **4.8000e-004** | **4.8000e-004** | | **4.8000e-004** | **4.8000e-004** | **0.0000** | **2.8260** | **2.8260** | **1.0000e-004** | **0.0000** | **2.8286** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 9.0000e-005 | 6.0000e-005 | 6.1000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.1702 | 0.1702 | 0.0000 | 0.0000 | 0.1703 |
| **Total** | **9.0000e-005** | **6.0000e-005** | **6.1000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.1702** | **0.1702** | **0.0000** | **0.0000** | **0.1703** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Unmitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | Mgal | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Out door Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station SCWD-SVWD
**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - New pump station for SCWD-SVWD intertie

Land Use - Pump station assumed to be 2 ksf

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Assuming 0.05 acres would be graded for pump station

Trips and VMT - Construction vehicle information based on City input

Architectural Coating - Default architectural coating EF

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 5/17/2027 | 5/7/2027 |
| tblConstructionPhase | PhaseEndDate | 10/6/2027 | 5/28/2027 |
| tblConstructionPhase | PhaseEndDate | 10/13/2027 | 6/11/2027 |
| tblConstructionPhase | PhaseEndDate | 10/20/2027 | 6/4/2027 |
| tblConstructionPhase | PhaseStartDate | 5/15/2027 | 5/2/2027 |
| tblConstructionPhase | PhaseStartDate | 5/20/2027 | 5/9/2027 |
| tblConstructionPhase | PhaseStartDate | 10/7/2027 | 6/6/2027 |
| tblConstructionPhase | PhaseStartDate | 10/14/2027 | 5/30/2027 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.05 |
| tblOffRoadEquipment | LoadFactor | 0.40 | 0.40 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 3.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 5.8054 | 15.4845 | 23.4864 | 0.0401 | 6.1119 | 0.5983 | 6.4534 | 3.3327 | 0.5854 | 3.6469 | 0.0000 | 3,771.3763 | 3,771.3763 | 0.4158 | 0.0000 | 3,781.7714 |
| **Maximum** | **5.8054** | **15.4845** | **23.4864** | **0.0401** | **6.1119** | **0.5983** | **6.4534** | **3.3327** | **0.5854** | **3.6469** | **0.0000** | **3,771.3763** | **3,771.3763** | **0.4158** | **0.0000** | **3,781.7714** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 5.8054 | 15.4845 | 23.4864 | 0.0401 | 2.7939 | 0.5983 | 3.1355 | 1.5114 | 0.5854 | 1.8257 | 0.0000 | 3,771.3763 | 3,771.3763 | 0.4158 | 0.0000 | 3,781.7714 |
| **Maximum** | **5.8054** | **15.4845** | **23.4864** | **0.0401** | **2.7939** | **0.5983** | **3.1355** | **1.5114** | **0.5854** | **1.8257** | **0.0000** | **3,771.3763** | **3,771.3763** | **0.4158** | **0.0000** | **3,781.7714** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **54.29** | **0.00** | **51.41** | **54.65** | **0.00** | **49.94** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/2/2027 | 5/7/2027 | 5 | 5 | |
| 2 | Building Construction | Building Construction | 5/9/2027 | 5/28/2027 | 5 | 15 | |
| 3 | Architectural Coating | Architectural Coating | 5/30/2027 | 6/4/2027 | 5 | 5 | |
| 4 | Paving | Paving | 6/6/2027 | 6/11/2027 | 5 | 5 | |
| 5 | Testing | Building Construction | 6/13/2027 | 6/25/2027 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0.05**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Site Preparation | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Building Construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building Construction | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Building Construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building Construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | 0 | 0.00 | 80 | 0.38 |

| | | | | | |
|---|---|---|---|---|---|
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Building Construction | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.0327 | 0.0000 | 6.0327 | 3.3114 | 0.0000 | 3.3114 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7726 | 7.8883 | 5.1922 | 0.0116 | | 0.3408 | 0.3408 | | 0.3136 | 0.3136 | | 1,119.2992 | 1,119.2992 | 0.3620 | | 1,128.3493 |
| **Total** | **0.7726** | **7.8883** | **5.1922** | **0.0116** | **6.0327** | **0.3408** | **6.3735** | **3.3114** | **0.3136** | **3.6249** | | **1,119.2992** | **1,119.2992** | **0.3620** | | **1,128.3493** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0270** | **0.1864** | **0.2107** | **1.0500e-003** | **0.0792** | **7.1000e-004** | **0.0799** | **0.0213** | **6.7000e-004** | **0.0220** | | **107.4258** | **107.4258** | **3.2100e-003** | | **107.5061** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.7147 | 0.0000 | 2.7147 | 1.4901 | 0.0000 | 1.4901 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7726 | 7.8883 | 5.1922 | 0.0116 | | 0.3408 | 0.3408 | | 0.3136 | 0.3136 | 0.0000 | 1,119.2992 | 1,119.2992 | 0.3620 | | 1,128.3493 |
| **Total** | **0.7726** | **7.8883** | **5.1922** | **0.0116** | **2.7147** | **0.3408** | **3.0555** | **1.4901** | **0.3136** | **1.8037** | **0.0000** | **1,119.2992** | **1,119.2992** | **0.3620** | | **1,128.3493** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0270** | **0.1864** | **0.2107** | **1.0500e-003** | **0.0792** | **7.1000e-004** | **0.0799** | **0.0213** | **6.7000e-004** | **0.0220** | | **107.4258** | **107.4258** | **3.2100e-003** | | **107.5061** |

## 3.3 Building Construction - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0270** | **0.1864** | **0.2107** | **1.0500e-003** | **0.0792** | **7.1000e-004** | **0.0799** | **0.0213** | **6.7000e-004** | **0.0220** | | **107.4258** | **107.4258** | **3.2100e-003** | | **107.5061** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | 0.0000 | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | **0.0000** | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0228 | 0.0140 | 0.1688 | 5.3000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 52.4572 | 52.4572 | 1.3700e-003 | | 52.4914 |
| **Total** | **0.0270** | **0.1864** | **0.2107** | **1.0500e-003** | **0.0792** | **7.1000e-004** | **0.0799** | **0.0213** | **6.7000e-004** | **0.0220** | | **107.4258** | **107.4258** | **3.2100e-003** | | **107.5061** |

# 3.4 Architectural Coating - 2027

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **5.7898** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0114 | 7.0200e-003 | 0.0844 | 2.6000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 26.2286 | 26.2286 | 6.8000e-004 | | 26.2457 |
| **Total** | **0.0156** | **0.1794** | **0.1263** | **7.8000e-004** | **0.0464** | **5.0000e-004** | **0.0468** | **0.0126** | **4.7000e-004** | **0.0131** | | **81.1972** | **81.1972** | **2.5200e-003** | | **81.2604** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | 0.0000 | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **5.7898** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | **0.0000** | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | | lb/day | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0114 | 7.0200e-003 | 0.0844 | 2.6000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 26.2286 | 26.2286 | 6.8000e-004 | | 26.2457 |
| **Total** | **0.0156** | **0.1794** | **0.1263** | **7.8000e-004** | **0.0464** | **5.0000e-004** | **0.0468** | **0.0126** | **4.7000e-004** | **0.0131** | | **81.1972** | **81.1972** | **2.5200e-003** | | **81.2604** |

## 3.5 Paving - 2027

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | lb/day | | | | | | | | lb/day | | |
| Off-Road | 0.1738 | 1.5831 | 2.8958 | 4.7000e-003 | | 0.0741 | 0.0741 | | 0.0682 | 0.0682 | | 454.9933 | 454.9933 | 0.1472 | | 458.6721 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.1738** | **1.5831** | **2.8958** | **4.7000e-003** | | **0.0741** | **0.0741** | | **0.0682** | **0.0682** | | **454.9933** | **454.9933** | **0.1472** | | **458.6721** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0114 | 7.0200e-003 | 0.0844 | 2.6000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 26.2286 | 26.2286 | 6.8000e-004 | | 26.2457 |
| **Total** | **0.0156** | **0.1794** | **0.1263** | **7.8000e-004** | **0.0464** | **5.0000e-004** | **0.0468** | **0.0126** | **4.7000e-004** | **0.0131** | | **81.1972** | **81.1972** | **2.5200e-003** | | **81.2604** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.1738 | 1.5831 | 2.8958 | 4.7000e-003 | | 0.0741 | 0.0741 | | 0.0682 | 0.0682 | 0.0000 | 454.9933 | 454.9933 | 0.1472 | | 458.6721 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.1738** | **1.5831** | **2.8958** | **4.7000e-003** | | **0.0741** | **0.0741** | | **0.0682** | **0.0682** | **0.0000** | **454.9933** | **454.9933** | **0.1472** | | **458.6721** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0114 | 7.0200e-003 | 0.0844 | 2.6000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 26.2286 | 26.2286 | 6.8000e-004 | | 26.2457 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0156** | **0.1794** | **0.1263** | **7.8000e-004** | **0.0464** | **5.0000e-004** | **0.0468** | **0.0126** | **4.7000e-004** | **0.0131** | | **81.1972** | **81.1972** | **2.5200e-003** | | **81.2604** |

## 3.6 Testing - 2027

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0171 | 0.0105 | 0.1266 | 3.9000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 39.3429 | 39.3429 | 1.0300e-003 | | 39.3685 |
| **Total** | **0.0171** | **0.0105** | **0.1266** | **3.9000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **39.3429** | **39.3429** | **1.0300e-003** | | **39.3685** |

### Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | 0.0000 | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | **0.0000** | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

**Mitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0171 | 0.0105 | 0.1266 | 3.9000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 39.3429 | 39.3429 | 1.0300e-003 | | 39.3685 |
| **Total** | **0.0171** | **0.0105** | **0.1266** | **3.9000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **39.3429** | **39.3429** | **1.0300e-003** | | **39.3685** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

# 11.0 Vegetation

# SCWR - Pump Station SCWD-SVWD
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - New pump station for SCWD-SVWD intertie

Land Use - Pump station assumed to be 2 ksf

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Assuming 0.05 acres would be graded for pump station

Trips and VMT - Construction vehicle information based on City input

Architectural Coating - Default architectural coating EF

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 5/17/2027 | 5/7/2027 |
| tblConstructionPhase | PhaseEndDate | 10/6/2027 | 5/28/2027 |
| tblConstructionPhase | PhaseEndDate | 10/13/2027 | 6/11/2027 |
| tblConstructionPhase | PhaseEndDate | 10/20/2027 | 6/4/2027 |
| tblConstructionPhase | PhaseStartDate | 5/15/2027 | 5/2/2027 |
| tblConstructionPhase | PhaseStartDate | 5/20/2027 | 5/9/2027 |
| tblConstructionPhase | PhaseStartDate | 10/7/2027 | 6/6/2027 |
| tblConstructionPhase | PhaseStartDate | 10/14/2027 | 5/30/2027 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.05 |
| tblOffRoadEquipment | LoadFactor | 0.40 | 0.40 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 3.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |

| | | | |
|---|---|---|---|
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 5.8072 | 15.4884 | 23.4913 | 0.0400 | 6.1119 | 0.5983 | 6.4534 | 3.3327 | 0.5854 | 3.6469 | 0.0000 | 3,767.7089 | 3,767.7089 | 0.4159 | 0.0000 | 3,778.1056 |
| **Maximum** | **5.8072** | **15.4884** | **23.4913** | **0.0400** | **6.1119** | **0.5983** | **6.4534** | **3.3327** | **0.5854** | **3.6469** | **0.0000** | **3,767.7089** | **3,767.7089** | **0.4159** | **0.0000** | **3,778.1056** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 5.8072 | 15.4884 | 23.4913 | 0.0400 | 2.7939 | 0.5983 | 3.1355 | 1.5114 | 0.5854 | 1.8257 | 0.0000 | 3,767.7089 | 3,767.7089 | 0.4159 | 0.0000 | 3,778.1056 |
| **Maximum** | **5.8072** | **15.4884** | **23.4913** | **0.0400** | **2.7939** | **0.5983** | **3.1355** | **1.5114** | **0.5854** | **1.8257** | **0.0000** | **3,767.7089** | **3,767.7089** | **0.4159** | **0.0000** | **3,778.1056** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **54.29** | **0.00** | **51.41** | **54.65** | **0.00** | **49.94** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/2/2027 | 5/7/2027 | 5 | 5 | |
| 2 | Building Construction | Building Construction | 5/9/2027 | 5/28/2027 | 5 | 15 | |
| 3 | Architectural Coating | Architectural Coating | 5/30/2027 | 6/4/2027 | 5 | 5 | |
| 4 | Paving | Paving | 6/6/2027 | 6/11/2027 | 5 | 5 | |
| 5 | Testing | Building Construction | 6/13/2027 | 6/25/2027 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0.05**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Site Preparation | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Building Construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building Construction | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Building Construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building Construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | 0 | 0.00 | 80 | 0.38 |

| | | | | | |
|---|---|---|---|---|---|
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Building Construction | Generator Sets | 4 | 8.00 | 84 | 0.74 |
| Building Construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.0327 | 0.0000 | 6.0327 | 3.3114 | 0.0000 | 3.3114 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7726 | 7.8883 | 5.1922 | 0.0116 | | 0.3408 | 0.3408 | | 0.3136 | 0.3136 | | 1,119.2992 | 1,119.2992 | 0.3620 | | 1,128.3493 |
| **Total** | **0.7726** | **7.8883** | **5.1922** | **0.0116** | **6.0327** | **0.3408** | **6.3735** | **3.3114** | **0.3136** | **3.6249** | | **1,119.2992** | **1,119.2992** | **0.3620** | | **1,128.3493** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0303** | **0.1903** | **0.2155** | **1.0100e-003** | **0.0792** | **7.3000e-004** | **0.0799** | **0.0213** | **6.8000e-004** | **0.0220** | | **103.7585** | **103.7585** | **3.2700e-003** | | **103.8402** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.7147 | 0.0000 | 2.7147 | 1.4901 | 0.0000 | 1.4901 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7726 | 7.8883 | 5.1922 | 0.0116 | | 0.3408 | 0.3408 | | 0.3136 | 0.3136 | 0.0000 | 1,119.2992 | 1,119.2992 | 0.3620 | | 1,128.3493 |
| **Total** | **0.7726** | **7.8883** | **5.1922** | **0.0116** | **2.7147** | **0.3408** | **3.0555** | **1.4901** | **0.3136** | **1.8037** | **0.0000** | **1,119.2992** | **1,119.2992** | **0.3620** | | **1,128.3493** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0303** | **0.1903** | **0.2155** | **1.0100e-003** | **0.0792** | **7.3000e-004** | **0.0799** | **0.0213** | **6.8000e-004** | **0.0220** | | **103.7585** | **103.7585** | **3.2700e-003** | | **103.8402** |

## 3.3 Building Construction - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0303** | **0.1903** | **0.2155** | **1.0100e-003** | **0.0792** | **7.3000e-004** | **0.0799** | **0.0213** | **6.8000e-004** | **0.0220** | | **103.7585** | **103.7585** | **3.2700e-003** | | **103.8402** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7291 | 15.2981 | 23.2758 | 0.0390 | | 0.5976 | 0.5976 | | 0.5847 | 0.5847 | 0.0000 | 3,663.9505 | 3,663.9505 | 0.4126 | | 3,674.2654 |
| **Total** | **1.7291** | **15.2981** | **23.2758** | **0.0390** | | **0.5976** | **0.5976** | | **0.5847** | **0.5847** | **0.0000** | **3,663.9505** | **3,663.9505** | **0.4126** | | **3,674.2654** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0259 | 0.0175 | 0.1684 | 5.0000e-004 | 0.0657 | 4.3000e-004 | 0.0662 | 0.0174 | 4.0000e-004 | 0.0178 | | 49.9798 | 49.9798 | 1.3100e-003 | | 50.0124 |
| **Total** | **0.0303** | **0.1903** | **0.2155** | **1.0100e-003** | **0.0792** | **7.3000e-004** | **0.0799** | **0.0213** | **6.8000e-004** | **0.0220** | | **103.7585** | **103.7585** | **3.2700e-003** | | **103.8402** |

# 3.4 Architectural Coating - 2027

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **5.7898** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0129 | 8.7400e-003 | 0.0842 | 2.5000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 24.9899 | 24.9899 | 6.5000e-004 | | 25.0062 |
| **Total** | **0.0174** | **0.1816** | **0.1313** | **7.6000e-004** | **0.0464** | **5.2000e-004** | **0.0469** | **0.0126** | **4.8000e-004** | **0.0131** | | **78.7686** | **78.7686** | **2.6100e-003** | | **78.8340** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2278 | 1.5273 | 2.4122 | 3.9600e-003 | | 0.0687 | 0.0687 | | 0.0687 | 0.0687 | 0.0000 | 375.2641 | 375.2641 | 0.0205 | | 375.7758 |
| **Total** | **5.7898** | **1.5273** | **2.4122** | **3.9600e-003** | | **0.0687** | **0.0687** | | **0.0687** | **0.0687** | **0.0000** | **375.2641** | **375.2641** | **0.0205** | | **375.7758** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0129 | 8.7400e-003 | 0.0842 | 2.5000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 24.9899 | 24.9899 | 6.5000e-004 | | 25.0062 |
| **Total** | **0.0174** | **0.1816** | **0.1313** | **7.6000e-004** | **0.0464** | **5.2000e-004** | **0.0469** | **0.0126** | **4.8000e-004** | **0.0131** | | **78.7686** | **78.7686** | **2.6100e-003** | | **78.8340** |

## 3.5 Paving - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.1738 | 1.5831 | 2.8958 | 4.7000e-003 | | 0.0741 | 0.0741 | | 0.0682 | 0.0682 | | 454.9933 | 454.9933 | 0.1472 | | 458.6721 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.1738** | **1.5831** | **2.8958** | **4.7000e-003** | | **0.0741** | **0.0741** | | **0.0682** | **0.0682** | | **454.9933** | **454.9933** | **0.1472** | | **458.6721** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0129 | 8.7400e-003 | 0.0842 | 2.5000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 24.9899 | 24.9899 | 6.5000e-004 | | 25.0062 |
| **Total** | **0.0174** | **0.1816** | **0.1313** | **7.6000e-004** | **0.0464** | **5.2000e-004** | **0.0469** | **0.0126** | **4.8000e-004** | **0.0131** | | **78.7686** | **78.7686** | **2.6100e-003** | | **78.8340** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.1738 | 1.5831 | 2.8958 | 4.7000e-003 | | 0.0741 | 0.0741 | | 0.0682 | 0.0682 | 0.0000 | 454.9933 | 454.9933 | 0.1472 | | 458.6721 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.1738** | **1.5831** | **2.8958** | **4.7000e-003** | | **0.0741** | **0.0741** | | **0.0682** | **0.0682** | **0.0000** | **454.9933** | **454.9933** | **0.1472** | | **458.6721** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0129 | 8.7400e-003 | 0.0842 | 2.5000e-004 | 0.0329 | 2.2000e-004 | 0.0331 | 8.7200e-003 | 2.0000e-004 | 8.9100e-003 | | 24.9899 | 24.9899 | 6.5000e-004 | | 25.0062 |

| Total | 0.0174 | 0.1816 | 0.1313 | 7.6000e-004 | 0.0464 | 5.2000e-004 | 0.0469 | 0.0126 | 4.8000e-004 | 0.0131 | | 78.7686 | 78.7686 | 2.6100e-003 | | 78.8340 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

### 3.6 Testing - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0194 | 0.0131 | 0.1263 | 3.8000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 37.4848 | 37.4848 | 9.8000e-004 | | 37.5093 |
| **Total** | **0.0194** | **0.0131** | **0.1263** | **3.8000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **37.4848** | **37.4848** | **9.8000e-004** | | **37.5093** |

**Mitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | 0.0000 | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | **0.0000** | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

**Mitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0194 | 0.0131 | 0.1263 | 3.8000e-004 | 0.0493 | 3.2000e-004 | 0.0496 | 0.0131 | 3.0000e-004 | 0.0134 | | 37.4848 | 37.4848 | 9.8000e-004 | | 37.5093 |
| **Total** | **0.0194** | **0.0131** | **0.1263** | **3.8000e-004** | **0.0493** | **3.2000e-004** | **0.0496** | **0.0131** | **3.0000e-004** | **0.0134** | | **37.4848** | **37.4848** | **9.8000e-004** | | **37.5093** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station SqCWD-CWD
## Santa Cruz County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - New pump station for SqCWD-CWD intertie

Land Use - Pump station assumed to be 2 ksf

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Assuming 0.05 acres would be graded for pump station

Trips and VMT - Construction vehicle information based on City input

Architectural Coating - Default architectural coating EF

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 5/2/2022 | 5/6/2022 |
| tblConstructionPhase | PhaseEndDate | 9/19/2022 | 5/27/2022 |
| tblConstructionPhase | PhaseEndDate | 2/13/2023 | 6/10/2022 |
| tblConstructionPhase | PhaseEndDate | 2/20/2023 | 6/3/2022 |
| tblConstructionPhase | PhaseEndDate | 2/6/2023 | 6/24/2022 |
| tblConstructionPhase | PhaseStartDate | 5/3/2022 | 5/8/2022 |
| tblConstructionPhase | PhaseStartDate | 2/7/2023 | 6/5/2022 |
| tblConstructionPhase | PhaseStartDate | 2/14/2023 | 5/29/2022 |
| tblConstructionPhase | PhaseStartDate | 9/20/2022 | 6/12/2022 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.05 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 3.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

# 2.0 Emissions Summary

## 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0359 | 0.1935 | 0.2268 | 3.9000e-004 | 0.0163 | 9.4900e-003 | 0.0258 | 8.6100e-003 | 9.2100e-003 | 0.0178 | 0.0000 | 33.8541 | 33.8541 | 4.4300e-003 | 0.0000 | 33.9649 |
| **Maximum** | **0.0359** | **0.1935** | **0.2268** | **3.9000e-004** | **0.0163** | **9.4900e-003** | **0.0258** | **8.6100e-003** | **9.2100e-003** | **0.0178** | **0.0000** | **33.8541** | **33.8541** | **4.4300e-003** | **0.0000** | **33.9649** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0359 | 0.1935 | 0.2268 | 3.9000e-004 | 8.0100e-003 | 9.4900e-003 | 0.0175 | 4.0600e-003 | 9.2100e-003 | 0.0133 | 0.0000 | 33.8541 | 33.8541 | 4.4300e-003 | 0.0000 | 33.9649 |
| **Maximum** | **0.0359** | **0.1935** | **0.2268** | **3.9000e-004** | **8.0100e-003** | **9.4900e-003** | **0.0175** | **4.0600e-003** | **9.2100e-003** | **0.0133** | **0.0000** | **33.8541** | **33.8541** | **4.4300e-003** | **0.0000** | **33.9649** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **50.89** | **0.00** | **32.17** | **52.85** | **0.00** | **25.53** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **5-1-2022** | **7-31-2022** | 0.2126 | 0.2126 |
| | | **Highest** | 0.2126 | 0.2126 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/1/2022 | 5/6/2022 | 5 | 5 | |
| 2 | Building Construction | Building Construction | 5/8/2022 | 5/27/2022 | 5 | 15 | |
| 3 | Architectural Coating | Architectural Coating | 5/29/2022 | 6/3/2022 | 5 | 5 | |
| 4 | Paving | Paving | 6/5/2022 | 6/10/2022 | 5 | 5 | |
| 5 | Testing | Building Construction | 6/12/2022 | 6/24/2022 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0.05**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Site Preparation | Rubber Tired Dozers | | 1 | 8.00 | 247 | 0.40 |
| Building Construction | Aerial Lifts | | 1 | 8.00 | 63 | 0.31 |
| Building Construction | Cement and Mortar Mixers | | 1 | 8.00 | 9 | 0.56 |
| Building Construction | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Building Construction | Forklifts | | 1 | 8.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | | 0 | 0.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Building Construction | Generator Sets | | 4 | 8.00 | 84 | 0.74 |
| Building Construction | Welders | | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0151 | 0.0000 | 0.0151 | 8.2800e-003 | 0.0000 | 8.2800e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.5000e-003 | 0.0262 | 0.0146 | 3.0000e-005 | | 1.2700e-003 | 1.2700e-003 | | 1.1700e-003 | 1.1700e-003 | 0.0000 | 2.5589 | 2.5589 | 8.3000e-004 | 0.0000 | 2.5796 |
| **Total** | **2.5000e-003** | **0.0262** | **0.0146** | **3.0000e-005** | **0.0151** | **1.2700e-003** | **0.0164** | **8.2800e-003** | **1.1700e-003** | **9.4500e-003** | **0.0000** | **2.5589** | **2.5589** | **8.3000e-004** | **0.0000** | **2.5796** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 6.7900e-003 | 0.0000 | 6.7900e-003 | 3.7300e-003 | 0.0000 | 3.7300e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.5000e-003 | 0.0262 | 0.0146 | 3.0000e-005 | | 1.2700e-003 | 1.2700e-003 | | 1.1700e-003 | 1.1700e-003 | 0.0000 | 2.5589 | 2.5589 | 8.3000e-004 | 0.0000 | 2.5796 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.5000e-003** | **0.0262** | **0.0146** | **3.0000e-005** | **6.7900e-003** | **1.2700e-003** | **8.0600e-003** | **3.7300e-003** | **1.1700e-003** | **4.9000e-003** | **0.0000** | **2.5589** | **2.5589** | **8.3000e-004** | **0.0000** | **2.5796** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## 3.3 Building Construction - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0160 | 0.1388 | 0.1757 | 2.9000e-004 | | 6.9500e-003 | 6.9500e-003 | | 6.7900e-003 | 6.7900e-003 | 0.0000 | 24.9244 | 24.9244 | 3.0200e-003 | 0.0000 | 24.9999 |
| **Total** | **0.0160** | **0.1388** | **0.1757** | **2.9000e-004** | | **6.9500e-003** | **6.9500e-003** | | **6.7900e-003** | **6.7900e-003** | **0.0000** | **24.9244** | **24.9244** | **3.0200e-003** | **0.0000** | **24.9999** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 5.0000e-005 | 1.7400e-003 | 4.5000e-004 | 0.0000 | 1.0000e-004 | 1.0000e-005 | 1.0000e-004 | 3.0000e-005 | 1.0000e-005 | 3.0000e-005 | 0.0000 | 0.3851 | 0.3851 | 1.0000e-005 | 0.0000 | 0.3854 |
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **2.9000e-004** | **1.9400e-003** | **2.2900e-003** | **0.0000** | **5.7000e-004** | **1.0000e-005** | **5.8000e-004** | **1.6000e-004** | **1.0000e-005** | **1.6000e-004** | **0.0000** | **0.7963** | **0.7963** | **3.0000e-005** | **0.0000** | **0.7971** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0160 | 0.1388 | 0.1757 | 2.9000e-004 | | 6.9500e-003 | 6.9500e-003 | | 6.7900e-003 | 6.7900e-003 | 0.0000 | 24.9244 | 24.9244 | 3.0200e-003 | 0.0000 | 24.9999 |
| **Total** | **0.0160** | **0.1388** | **0.1757** | **2.9000e-004** | | **6.9500e-003** | **6.9500e-003** | | **6.7900e-003** | **6.7900e-003** | **0.0000** | **24.9244** | **24.9244** | **3.0200e-003** | **0.0000** | **24.9999** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 5.0000e-005 | 1.7400e-003 | 4.5000e-004 | 0.0000 | 1.0000e-004 | 1.0000e-005 | 1.0000e-004 | 3.0000e-005 | 1.0000e-005 | 3.0000e-005 | 0.0000 | 0.3851 | 0.3851 | 1.0000e-005 | 0.0000 | 0.3854 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 2.4000e-004 | 2.0000e-004 | 1.8400e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.4113 | 0.4113 | 2.0000e-005 | 0.0000 | 0.4116 |
| **Total** | **2.9000e-004** | **1.9400e-003** | **2.2900e-003** | **0.0000** | **5.7000e-004** | **1.0000e-005** | **5.8000e-004** | **1.6000e-004** | **1.0000e-005** | **1.6000e-004** | **0.0000** | **0.7963** | **0.7963** | **3.0000e-005** | **0.0000** | **0.7971** |

## 3.4 Architectural Coating - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0139 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 6.8000e-004 | 4.6900e-003 | 6.0500e-003 | 1.0000e-005 | | 2.7000e-004 | 2.7000e-004 | | 2.7000e-004 | 2.7000e-004 | 0.0000 | 0.8511 | 0.8511 | 6.0000e-005 | 0.0000 | 0.8525 |
| **Total** | **0.0146** | **4.6900e-003** | **6.0500e-003** | **1.0000e-005** | | **2.7000e-004** | **2.7000e-004** | | **2.7000e-004** | **2.7000e-004** | **0.0000** | **0.8511** | **0.8511** | **6.0000e-005** | **0.0000** | **0.8525** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0685 | 0.0685 | 0.0000 | 0.0000 | 0.0686 |
| **Total** | **6.0000e-005** | **6.1000e-004** | **4.6000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1969** | **0.1969** | **0.0000** | **0.0000** | **0.1971** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0139 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 6.8000e-004 | 4.6900e-003 | 6.0500e-003 | 1.0000e-005 | | 2.7000e-004 | 2.7000e-004 | | 2.7000e-004 | 2.7000e-004 | 0.0000 | 0.8511 | 0.8511 | 6.0000e-005 | 0.0000 | 0.8525 |
| **Total** | **0.0146** | **4.6900e-003** | **6.0500e-003** | **1.0000e-005** | | **2.7000e-004** | **2.7000e-004** | | **2.7000e-004** | **2.7000e-004** | **0.0000** | **0.8511** | **0.8511** | **6.0000e-005** | **0.0000** | **0.8525** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0685 | 0.0685 | 0.0000 | 0.0000 | 0.0686 |
| **Total** | **6.0000e-005** | **6.1000e-004** | **4.6000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1969** | **0.1969** | **0.0000** | **0.0000** | **0.1971** |

## 3.5 Paving - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.2000e-004 | 5.2500e-003 | 7.2100e-003 | 1.0000e-005 | | 2.5000e-004 | 2.5000e-004 | | 2.3000e-004 | 2.3000e-004 | 0.0000 | 1.0325 | 1.0325 | 3.3000e-004 | 0.0000 | 1.0409 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **5.2000e-004** | **5.2500e-003** | **7.2100e-003** | **1.0000e-005** | | **2.5000e-004** | **2.5000e-004** | | **2.3000e-004** | **2.3000e-004** | **0.0000** | **1.0325** | **1.0325** | **3.3000e-004** | **0.0000** | **1.0409** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0685 | 0.0685 | 0.0000 | 0.0000 | 0.0686 |
| **Total** | **6.0000e-005** | **6.1000e-004** | **4.6000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1969** | **0.1969** | **0.0000** | **0.0000** | **0.1971** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.2000e-004 | 5.2500e-003 | 7.2100e-003 | 1.0000e-005 | | 2.5000e-004 | 2.5000e-004 | | 2.3000e-004 | 2.3000e-004 | 0.0000 | 1.0325 | 1.0325 | 3.3000e-004 | 0.0000 | 1.0409 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **5.2000e-004** | **5.2500e-003** | **7.2100e-003** | **1.0000e-005** | | **2.5000e-004** | **2.5000e-004** | | **2.3000e-004** | **2.3000e-004** | **0.0000** | **1.0325** | **1.0325** | **3.3000e-004** | **0.0000** | **1.0409** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.1000e-004 | 0.0000 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0685 | 0.0685 | 0.0000 | 0.0000 | 0.0686 |
| **Total** | **6.0000e-005** | **6.1000e-004** | **4.6000e-004** | **0.0000** | **1.1000e-004** | **0.0000** | **1.1000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1969** | **0.1969** | **0.0000** | **0.0000** | **0.1971** |

## 3.6 Testing - 2022

### Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.6500e-003 | 0.0146 | 0.0184 | 3.0000e-005 | | 7.3000e-004 | 7.3000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.8260 | 2.8260 | 1.3000e-004 | 0.0000 | 2.8294 |
| **Total** | **1.6500e-003** | **0.0146** | **0.0184** | **3.0000e-005** | | **7.3000e-004** | **7.3000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.8260** | **2.8260** | **1.3000e-004** | **0.0000** | **2.8294** |

### Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.2000e-004 | 1.0000e-004 | 9.2000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.2056 | 0.2056 | 1.0000e-005 | 0.0000 | 0.2058 |
| **Total** | **1.2000e-004** | **1.0000e-004** | **9.2000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.2056** | **0.2056** | **1.0000e-005** | **0.0000** | **0.2058** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.6500e-003 | 0.0146 | 0.0184 | 3.0000e-005 | | 7.3000e-004 | 7.3000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 2.8260 | 2.8260 | 1.3000e-004 | 0.0000 | 2.8294 |
| **Total** | **1.6500e-003** | **0.0146** | **0.0184** | **3.0000e-005** | | **7.3000e-004** | **7.3000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **2.8260** | **2.8260** | **1.3000e-004** | **0.0000** | **2.8294** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.2000e-004 | 1.0000e-004 | 9.2000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.2056 | 0.2056 | 1.0000e-005 | 0.0000 | 0.2058 |
| **Total** | **1.2000e-004** | **1.0000e-004** | **9.2000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.2056** | **0.2056** | **1.0000e-005** | **0.0000** | **0.2058** |

## 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Unmitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| Category | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | Mgal | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station SqCWD-CWD
**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - New pump station for SqCWD-CWD intertie

Land Use - Pump station assumed to be 2 ksf

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Assuming 0.05 acres would be graded for pump station

Trips and VMT - Construction vehicle information based on City input

Architectural Coating - Default architectural coating EF

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 5/2/2022 | 5/6/2022 |
| tblConstructionPhase | PhaseEndDate | 9/19/2022 | 5/27/2022 |
| tblConstructionPhase | PhaseEndDate | 2/13/2023 | 6/10/2022 |
| tblConstructionPhase | PhaseEndDate | 2/20/2023 | 6/3/2022 |
| tblConstructionPhase | PhaseEndDate | 2/6/2023 | 6/24/2022 |
| tblConstructionPhase | PhaseStartDate | 5/3/2022 | 5/8/2022 |
| tblConstructionPhase | PhaseStartDate | 2/7/2023 | 6/5/2022 |
| tblConstructionPhase | PhaseStartDate | 2/14/2023 | 5/29/2022 |
| tblConstructionPhase | PhaseStartDate | 9/20/2022 | 6/12/2022 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.05 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 3.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 5.8566 | 18.7632 | 23.7412 | 0.0402 | 6.1119 | 0.9275 | 6.6206 | 3.3327 | 0.9066 | 3.8007 | 0.0000 | 3,783.7533 | 3,783.7533 | 0.4482 | 0.0000 | 3,794.9591 |
| **Maximum** | **5.8566** | **18.7632** | **23.7412** | **0.0402** | **6.1119** | **0.9275** | **6.6206** | **3.3327** | **0.9066** | **3.8007** | **0.0000** | **3,783.7533** | **3,783.7533** | **0.4482** | **0.0000** | **3,794.9591** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 5.8566 | 18.7632 | 23.7412 | 0.0402 | 2.7939 | 0.9275 | 3.3026 | 1.5114 | 0.9066 | 1.9795 | 0.0000 | 3,783.7533 | 3,783.7533 | 0.4482 | 0.0000 | 3,794.9591 |
| **Maximum** | **5.8566** | **18.7632** | **23.7412** | **0.0402** | **2.7939** | **0.9275** | **3.3026** | **1.5114** | **0.9066** | **1.9795** | **0.0000** | **3,783.7533** | **3,783.7533** | **0.4482** | **0.0000** | **3,794.9591** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **54.29** | **0.00** | **50.12** | **54.65** | **0.00** | **47.92** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/1/2022 | 5/6/2022 | 5 | 5 | |
| 2 | Building Construction | Building Construction | 5/8/2022 | 5/27/2022 | 5 | 15 | |
| 3 | Architectural Coating | Architectural Coating | 5/29/2022 | 6/3/2022 | 5 | 5 | |
| 4 | Paving | Paving | 6/5/2022 | 6/10/2022 | 5 | 5 | |
| 5 | Testing | Building Construction | 6/12/2022 | 6/24/2022 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0.05**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Site Preparation | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Building Construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building Construction | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Building Construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building Construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | 0 | 0.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Architectural Coating | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Building Construction | Generator Sets | | 4 | 8.00 | 84 | 0.74 |
| Building Construction | Welders | | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.0327 | 0.0000 | 6.0327 | 3.3114 | 0.0000 | 3.3114 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.0018 | 10.4693 | 5.8199 | 0.0116 | | 0.5075 | 0.5075 | | 0.4669 | 0.4669 | | 1,128.2743 | 1,128.2743 | 0.3649 | | 1,137.3970 |
| **Total** | **1.0018** | **10.4693** | **5.8199** | **0.0116** | **6.0327** | **0.5075** | **6.5402** | **3.3114** | **0.4669** | **3.7783** | | **1,128.2743** | **1,128.2743** | **0.3649** | | **1,137.3970** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.7147 | 0.0000 | 2.7147 | 1.4901 | 0.0000 | 1.4901 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.0018 | 10.4693 | 5.8199 | 0.0116 | | 0.5075 | 0.5075 | | 0.4669 | 0.4669 | 0.0000 | 1,128.2743 | 1,128.2743 | 0.3649 | | 1,137.3970 |
| **Total** | **1.0018** | **10.4693** | **5.8199** | **0.0116** | **2.7147** | **0.5075** | **3.2222** | **1.4901** | **0.4669** | **1.9570** | **0.0000** | **1,128.2743** | **1,128.2743** | **0.3649** | | **1,137.3970** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.3 Building Construction - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1345 | 18.5106 | 23.4317 | 0.0390 | | 0.9263 | 0.9263 | | 0.9055 | 0.9055 | | 3,663.2609 | 3,663.2609 | 0.4438 | | 3,674.3558 |
| **Total** | **2.1345** | **18.5106** | **23.4317** | **0.0390** | | **0.9263** | **0.9263** | | **0.9055** | **0.9055** | | **3,663.2609** | **3,663.2609** | **0.4438** | | **3,674.3558** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1345 | 18.5106 | 23.4317 | 0.0390 | | 0.9263 | 0.9263 | | 0.9055 | 0.9055 | 0.0000 | 3,663.2609 | 3,663.2609 | 0.4438 | | 3,674.3558 |
| **Total** | **2.1345** | **18.5106** | **23.4317** | **0.0390** | | **0.9263** | **0.9263** | | **0.9055** | **0.9055** | **0.0000** | **3,663.2609** | **3,663.2609** | **0.4438** | | **3,674.3558** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.4 Architectural Coating - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **5.8347** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0155 | 0.0117 | 0.1266 | 3.2000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 31.6933 | 31.6933 | 1.1500e-003 | | 31.7221 |
| **Total** | **0.0218** | **0.2409** | **0.1829** | **8.6000e-004** | **0.0463** | **9.4000e-004** | **0.0473** | **0.0126** | **8.9000e-004** | **0.0135** | | **88.7991** | **88.7991** | **3.2800e-003** | | **88.8812** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | 0.0000 | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **5.8347** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | **0.0000** | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0155 | 0.0117 | 0.1266 | 3.2000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 31.6933 | 31.6933 | 1.1500e-003 | | 31.7221 |
| **Total** | **0.0218** | **0.2409** | **0.1829** | **8.6000e-004** | **0.0463** | **9.4000e-004** | **0.0473** | **0.0126** | **8.9000e-004** | **0.0135** | | **88.7991** | **88.7991** | **3.2800e-003** | | **88.8812** |

## 3.5 Paving - 2022

Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2069 | 2.0989 | 2.8839 | 4.7000e-003 | | 0.0997 | 0.0997 | | 0.0917 | 0.0917 | | 455.2579 | 455.2579 | 0.1472 | | 458.9389 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2069** | **2.0989** | **2.8839** | **4.7000e-003** | | **0.0997** | **0.0997** | | **0.0917** | **0.0917** | | **455.2579** | **455.2579** | **0.1472** | | **458.9389** |

Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0155 | 0.0117 | 0.1266 | 3.2000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 31.6933 | 31.6933 | 1.1500e-003 | | 31.7221 |
| **Total** | **0.0218** | **0.2409** | **0.1829** | **8.6000e-004** | **0.0463** | **9.4000e-004** | **0.0473** | **0.0126** | **8.9000e-004** | **0.0135** | | **88.7991** | **88.7991** | **3.2800e-003** | | **88.8812** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2069 | 2.0989 | 2.8839 | 4.7000e-003 | | 0.0997 | 0.0997 | | 0.0917 | 0.0917 | 0.0000 | 455.2579 | 455.2579 | 0.1472 | | 458.9389 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2069** | **2.0989** | **2.8839** | **4.7000e-003** | | **0.0997** | **0.0997** | | **0.0917** | **0.0917** | **0.0000** | **455.2579** | **455.2579** | **0.1472** | | **458.9389** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0155 | 0.0117 | 0.1266 | 3.2000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 31.6933 | 31.6933 | 1.1500e-003 | | 31.7221 |
| **Total** | **0.0218** | **0.2409** | **0.1829** | **8.6000e-004** | **0.0463** | **9.4000e-004** | **0.0473** | **0.0126** | **8.9000e-004** | **0.0135** | | **88.7991** | **88.7991** | **3.2800e-003** | | **88.8812** |

## 3.6 Testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0232** | **0.0175** | **0.1899** | **4.8000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **47.5400** | **47.5400** | **1.7300e-003** | | **47.5831** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | 0.0000 | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | **0.0000** | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0232** | **0.0175** | **0.1899** | **4.8000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **47.5400** | **47.5400** | **1.7300e-003** | | **47.5831** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station SqCWD-CWD
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - New pump station for SqCWD-CWD intertie

Land Use - Pump station assumed to be 2 ksf

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Grading - Assuming 0.05 acres would be graded for pump station

Trips and VMT - Construction vehicle information based on City input

Architectural Coating - Default architectural coating EF

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 5/2/2022 | 5/6/2022 |
| tblConstructionPhase | PhaseEndDate | 9/19/2022 | 5/27/2022 |
| tblConstructionPhase | PhaseEndDate | 2/13/2023 | 6/10/2022 |
| tblConstructionPhase | PhaseEndDate | 2/20/2023 | 6/3/2022 |
| tblConstructionPhase | PhaseEndDate | 2/6/2023 | 6/24/2022 |
| tblConstructionPhase | PhaseStartDate | 5/3/2022 | 5/8/2022 |
| tblConstructionPhase | PhaseStartDate | 2/7/2023 | 6/5/2022 |
| tblConstructionPhase | PhaseStartDate | 2/14/2023 | 5/29/2022 |
| tblConstructionPhase | PhaseStartDate | 9/20/2022 | 6/12/2022 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.05 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Rubber Tired Dozers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 4.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 7.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblTripsAndVMT | WorkerTripNumber | 3.00 | 4.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00 | 8.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 5.8589 | 18.7705 | 23.7513 | 0.0402 | 6.1119 | 0.9276 | 6.6206 | 3.3327 | 0.9067 | 3.8007 | 0.0000 | 3,779.5440 | 3,779.5440 | 0.4483 | 0.0000 | 3,790.7516 |
| **Maximum** | **5.8589** | **18.7705** | **23.7513** | **0.0402** | **6.1119** | **0.9276** | **6.6206** | **3.3327** | **0.9067** | **3.8007** | **0.0000** | **3,779.5440** | **3,779.5440** | **0.4483** | **0.0000** | **3,790.7516** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 5.8589 | 18.7705 | 23.7513 | 0.0402 | 2.7939 | 0.9276 | 3.3026 | 1.5114 | 0.9067 | 1.9795 | 0.0000 | 3,779.5440 | 3,779.5440 | 0.4483 | 0.0000 | 3,790.7516 |
| **Maximum** | **5.8589** | **18.7705** | **23.7513** | **0.0402** | **2.7939** | **0.9276** | **3.3026** | **1.5114** | **0.9067** | **1.9795** | **0.0000** | **3,779.5440** | **3,779.5440** | **0.4483** | **0.0000** | **3,790.7516** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **54.29** | **0.00** | **50.12** | **54.65** | **0.00** | **47.92** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/1/2022 | 5/6/2022 | 5 | 5 | |
| 2 | Building Construction | Building Construction | 5/8/2022 | 5/27/2022 | 5 | 15 | |
| 3 | Architectural Coating | Architectural Coating | 5/29/2022 | 6/3/2022 | 5 | 5 | |
| 4 | Paving | Paving | 6/5/2022 | 6/10/2022 | 5 | 5 | |
| 5 | Testing | Building Construction | 6/12/2022 | 6/24/2022 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0.05**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Site Preparation | Rubber Tired Dozers | 1 | 8.00 | 247 | 0.40 |
| Building Construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building Construction | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Building Construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building Construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 8.00 | 130 | 0.42 |
| Paving | Rollers | 0 | 0.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Architectural Coating | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Building Construction | Generator Sets | | 4 | 8.00 | 84 | 0.74 |
| Building Construction | Welders | | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 10 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 1 | 4.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.0327 | 0.0000 | 6.0327 | 3.3114 | 0.0000 | 3.3114 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.0018 | 10.4693 | 5.8199 | 0.0116 | | 0.5075 | 0.5075 | | 0.4669 | 0.4669 | | 1,128.2743 | 1,128.2743 | 0.3649 | | 1,137.3970 |
| **Total** | **1.0018** | **10.4693** | **5.8199** | **0.0116** | **6.0327** | **0.5075** | **6.5402** | **3.3114** | **0.4669** | **3.7783** | | **1,128.2743** | **1,128.2743** | **0.3649** | | **1,137.3970** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.7147 | 0.0000 | 2.7147 | 1.4901 | 0.0000 | 1.4901 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.0018 | 10.4693 | 5.8199 | 0.0116 | | 0.5075 | 0.5075 | | 0.4669 | 0.4669 | 0.0000 | 1,128.2743 | 1,128.2743 | 0.3649 | | 1,137.3970 |
| **Total** | **1.0018** | **10.4693** | **5.8199** | **0.0116** | **2.7147** | **0.5075** | **3.2222** | **1.4901** | **0.4669** | **1.9570** | **0.0000** | **1,128.2743** | **1,128.2743** | **0.3649** | | **1,137.3970** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## 3.3 Building Construction - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1345 | 18.5106 | 23.4317 | 0.0390 | | 0.9263 | 0.9263 | | 0.9055 | 0.9055 | | 3,663.2609 | 3,663.2609 | 0.4438 | | 3,674.3558 |
| **Total** | **2.1345** | **18.5106** | **23.4317** | **0.0390** | | **0.9263** | **0.9263** | | **0.9055** | **0.9055** | | **3,663.2609** | **3,663.2609** | **0.4438** | | **3,674.3558** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 2.1345 | 18.5106 | 23.4317 | 0.0390 | | 0.9263 | 0.9263 | | 0.9055 | 0.9055 | 0.0000 | 3,663.2609 | 3,663.2609 | 0.4438 | | 3,674.3558 |
| **Total** | **2.1345** | **18.5106** | **23.4317** | **0.0390** | | **0.9263** | **0.9263** | | **0.9055** | **0.9055** | **0.0000** | **3,663.2609** | **3,663.2609** | **0.4438** | | **3,674.3558** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

# 3.4 Architectural Coating - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **5.8347** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0174 | 0.0145 | 0.1279 | 3.0000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 30.1973 | 30.1973 | 1.1100e-003 | | 30.2252 |
| **Total** | **0.0241** | **0.2454** | **0.1918** | **8.3000e-004** | **0.0463** | **9.8000e-004** | **0.0473** | **0.0126** | **9.3000e-004** | **0.0135** | | **86.0858** | **86.0858** | **3.3900e-003** | | **86.1706** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 5.5620 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.2727 | 1.8780 | 2.4181 | 3.9600e-003 | | 0.1090 | 0.1090 | | 0.1090 | 0.1090 | 0.0000 | 375.2641 | 375.2641 | 0.0244 | | 375.8749 |
| **Total** | **5.8347** | **1.8780** | **2.4181** | **3.9600e-003** | | **0.1090** | **0.1090** | | **0.1090** | **0.1090** | **0.0000** | **375.2641** | **375.2641** | **0.0244** | | **375.8749** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0174 | 0.0145 | 0.1279 | 3.0000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 30.1973 | 30.1973 | 1.1100e-003 | | 30.2252 |
| **Total** | **0.0241** | **0.2454** | **0.1918** | **8.3000e-004** | **0.0463** | **9.8000e-004** | **0.0473** | **0.0126** | **9.3000e-004** | **0.0135** | | **86.0858** | **86.0858** | **3.3900e-003** | | **86.1706** |

## 3.5 Paving - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2069 | 2.0989 | 2.8839 | 4.7000e-003 | | 0.0997 | 0.0997 | | 0.0917 | 0.0917 | | 455.2579 | 455.2579 | 0.1472 | | 458.9389 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2069** | **2.0989** | **2.8839** | **4.7000e-003** | | **0.0997** | **0.0997** | | **0.0917** | **0.0917** | | **455.2579** | **455.2579** | **0.1472** | | **458.9389** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0174 | 0.0145 | 0.1279 | 3.0000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 30.1973 | 30.1973 | 1.1100e-003 | | 30.2252 |
| **Total** | **0.0241** | **0.2454** | **0.1918** | **8.3000e-004** | **0.0463** | **9.8000e-004** | **0.0473** | **0.0126** | **9.3000e-004** | **0.0135** | | **86.0858** | **86.0858** | **3.3900e-003** | | **86.1706** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2069 | 2.0989 | 2.8839 | 4.7000e-003 | | 0.0997 | 0.0997 | | 0.0917 | 0.0917 | 0.0000 | 455.2579 | 455.2579 | 0.1472 | | 458.9389 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.2069** | **2.0989** | **2.8839** | **4.7000e-003** | | **0.0997** | **0.0997** | | **0.0917** | **0.0917** | **0.0000** | **455.2579** | **455.2579** | **0.1472** | | **458.9389** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0174 | 0.0145 | 0.1279 | 3.0000e-004 | 0.0329 | 2.6000e-004 | 0.0331 | 8.7200e-003 | 2.4000e-004 | 8.9500e-003 | | 30.1973 | 30.1973 | 1.1100e-003 | | 30.2252 |
| **Total** | **0.0241** | **0.2454** | **0.1918** | **8.3000e-004** | **0.0463** | **9.8000e-004** | **0.0473** | **0.0126** | **9.3000e-004** | **0.0135** | | **86.0858** | **86.0858** | **3.3900e-003** | | **86.1706** |

### 3.6 Testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0261** | **0.0218** | **0.1918** | **4.6000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **45.2960** | **45.2960** | **1.6700e-003** | | **45.3378** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | 0.0000 | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | **0.0000** | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0261** | **0.0218** | **0.1918** | **4.6000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **45.2960** | **45.2960** | **1.6700e-003** | | **45.3378** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Coast Pump Station Upgrades

**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2029 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Coast pump station upgrades

Land Use - General light industry assumed as pump station surrogate

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Demolition - Assume 800 square feet demo of old pump station/debris off haul

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 9/1/2028 | 4/21/2028 |
| tblConstructionPhase | PhaseEndDate | 1/19/2029 | 4/28/2028 |
| tblConstructionPhase | PhaseEndDate | 6/8/2029 | 5/12/2028 |
| tblConstructionPhase | PhaseStartDate | 9/2/2028 | 4/22/2028 |
| tblConstructionPhase | PhaseStartDate | 1/20/2029 | 4/29/2028 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

# 2.0 Emissions Summary

## 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2028 | 0.0120 | 0.1040 | 0.1681 | 2.9000e-004 | 1.4200e-003 | 4.1900e-003 | 5.6100e-003 | 3.4000e-004 | 4.0700e-003 | 4.4100e-003 | 0.0000 | 24.9239 | 24.9239 | 3.3100e-003 | 0.0000 | 25.0066 |
| **Maximum** | **0.0120** | **0.1040** | **0.1681** | **2.9000e-004** | **1.4200e-003** | **4.1900e-003** | **5.6100e-003** | **3.4000e-004** | **4.0700e-003** | **4.4100e-003** | **0.0000** | **24.9239** | **24.9239** | **3.3100e-003** | **0.0000** | **25.0066** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2028 | 0.0120 | 0.1040 | 0.1681 | 2.9000e-004 | 1.2100e-003 | 4.1900e-003 | 5.4000e-003 | 3.1000e-004 | 4.0700e-003 | 4.3800e-003 | 0.0000 | 24.9239 | 24.9239 | 3.3100e-003 | 0.0000 | 25.0066 |
| **Maximum** | **0.0120** | **0.1040** | **0.1681** | **2.9000e-004** | **1.2100e-003** | **4.1900e-003** | **5.4000e-003** | **3.1000e-004** | **4.0700e-003** | **4.3800e-003** | **0.0000** | **24.9239** | **24.9239** | **3.3100e-003** | **0.0000** | **25.0066** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **14.79** | **0.00** | **3.74** | **8.82** | **0.00** | **0.68** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **4-1-2028** | **6-30-2028** | 0.1160 | 0.1160 |
| | | **Highest** | 0.1160 | 0.1160 |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 4/1/2028 | 4/14/2028 | 5 | 10 | |
| 2 | Structural rehabilitation | Building Construction | 4/15/2028 | 4/21/2028 | 5 | 5 | |
| 3 | Building construction | Building Construction | 4/22/2028 | 4/28/2028 | 5 | 5 | |
| 4 | Testing | Building Construction | 4/29/2028 | 5/12/2028 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demolition | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |

| | | | | | |
|---|---|---|---|---|---|
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Structural rehabilitation | Cranes | 0 | 0.00 | 231 | 0.29 |
| Structural rehabilitation | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Structural rehabilitation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Demolition | Excavators | 1 | 8.00 | 158 | 0.38 |
| Demolition | Pumps | 1 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Structural rehabilitation | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Structural rehabilitation | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building construction | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Building construction | Pavers | 1 | 8.00 | 130 | 0.42 |
| Building construction | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 9 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Structural rehabilitation | 5 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Demolition - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 3.9000e-004 | 0.0000 | 3.9000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.5900e-003 | 0.0316 | 0.0572 | 9.0000e-005 | | 1.3400e-003 | 1.3400e-003 | | 1.2800e-003 | 1.2800e-003 | 0.0000 | 7.8357 | 7.8357 | 1.7300e-003 | 0.0000 | 7.8791 |
| **Total** | **3.5900e-003** | **0.0316** | **0.0572** | **9.0000e-005** | **3.9000e-004** | **1.3400e-003** | **1.7300e-003** | **6.0000e-005** | **1.2800e-003** | **1.3400e-003** | **0.0000** | **7.8357** | **7.8357** | **1.7300e-003** | **0.0000** | **7.8791** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 2.0000e-005 | 8.5000e-004 | 2.2000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2461 | 0.2461 | 1.0000e-005 | 0.0000 | 0.2463 |
| Worker | 1.1000e-004 | 7.0000e-005 | 7.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2196 | 0.2196 | 1.0000e-005 | 0.0000 | 0.2197 |
| **Total** | **1.4000e-004** | **1.2800e-003** | **1.0900e-003** | **0.0000** | **4.2000e-004** | **0.0000** | **4.2000e-004** | **1.1000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **0.6110** | **0.6110** | **3.0000e-005** | **0.0000** | **0.6115** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 1.8000e-004 | 0.0000 | 1.8000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.5900e-003 | 0.0316 | 0.0572 | 9.0000e-005 | | 1.3400e-003 | 1.3400e-003 | | 1.2800e-003 | 1.2800e-003 | 0.0000 | 7.8357 | 7.8357 | 1.7300e-003 | 0.0000 | 7.8791 |
| **Total** | **3.5900e-003** | **0.0316** | **0.0572** | **9.0000e-005** | **1.8000e-004** | **1.3400e-003** | **1.5200e-003** | **3.0000e-005** | **1.2800e-003** | **1.3100e-003** | **0.0000** | **7.8357** | **7.8357** | **1.7300e-003** | **0.0000** | **7.8791** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 2.0000e-005 | 8.5000e-004 | 2.2000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2461 | 0.2461 | 1.0000e-005 | 0.0000 | 0.2463 |
| Worker | 1.1000e-004 | 7.0000e-005 | 7.5000e-004 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2196 | 0.2196 | 1.0000e-005 | 0.0000 | 0.2197 |
| **Total** | **1.4000e-004** | **1.2800e-003** | **1.0900e-003** | **0.0000** | **4.2000e-004** | **0.0000** | **4.2000e-004** | **1.1000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **0.6110** | **0.6110** | **3.0000e-005** | **0.0000** | **0.6115** |

## 3.3 Structural rehabilitation - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.7600e-003 | 0.0228 | 0.0344 | 6.0000e-005 | | 9.4000e-004 | 9.4000e-004 | | 9.4000e-004 | 9.4000e-004 | 0.0000 | 5.2047 | 5.2047 | 2.2000e-004 | 0.0000 | 5.2102 |
| **Total** | **2.7600e-003** | **0.0228** | **0.0344** | **6.0000e-005** | | **9.4000e-004** | **9.4000e-004** | | **9.4000e-004** | **9.4000e-004** | **0.0000** | **5.2047** | **5.2047** | **2.2000e-004** | **0.0000** | **5.2102** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.2000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1230 | 0.1230 | 0.0000 | 0.0000 | 0.1231 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.8000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1098 | 0.1098 | 0.0000 | 0.0000 | 0.1099 |
| **Total** | **6.0000e-005** | **4.6000e-004** | **4.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2328** | **0.2328** | **0.0000** | **0.0000** | **0.2330** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.7600e-003 | 0.0228 | 0.0344 | 6.0000e-005 | | 9.4000e-004 | 9.4000e-004 | | 9.4000e-004 | 9.4000e-004 | 0.0000 | 5.2047 | 5.2047 | 2.2000e-004 | 0.0000 | 5.2102 |
| **Total** | **2.7600e-003** | **0.0228** | **0.0344** | **6.0000e-005** | | **9.4000e-004** | **9.4000e-004** | | **9.4000e-004** | **9.4000e-004** | **0.0000** | **5.2047** | **5.2047** | **2.2000e-004** | **0.0000** | **5.2102** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.2000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1230 | 0.1230 | 0.0000 | 0.0000 | 0.1231 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.8000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1098 | 0.1098 | 0.0000 | 0.0000 | 0.1099 |
| **Total** | **6.0000e-005** | **4.6000e-004** | **4.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2328** | **0.2328** | **0.0000** | **0.0000** | **0.2330** |

## 3.4 Building construction - 2028

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 3.9900e-003 | 0.0354 | 0.0557 | 9.0000e-005 | | 1.4200e-003 | 1.4200e-003 | | 1.3700e-003 | 1.3700e-003 | 0.0000 | 7.8162 | 7.8162 | 1.2100e-003 | 0.0000 | 7.8464 |
| **Total** | **3.9900e-003** | **0.0354** | **0.0557** | **9.0000e-005** | | **1.4200e-003** | **1.4200e-003** | | **1.3700e-003** | **1.3700e-003** | **0.0000** | **7.8162** | **7.8162** | **1.2100e-003** | **0.0000** | **7.8464** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.2000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1230 | 0.1230 | 0.0000 | 0.0000 | 0.1231 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.8000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1098 | 0.1098 | 0.0000 | 0.0000 | 0.1099 |
| **Total** | **6.0000e-005** | **4.6000e-004** | **4.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2328** | **0.2328** | **0.0000** | **0.0000** | **0.2330** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 3.9900e-003 | 0.0354 | 0.0557 | 9.0000e-005 | | 1.4200e-003 | 1.4200e-003 | | 1.3700e-003 | 1.3700e-003 | 0.0000 | 7.8162 | 7.8162 | 1.2100e-003 | 0.0000 | 7.8464 |
| **Total** | **3.9900e-003** | **0.0354** | **0.0557** | **9.0000e-005** | | **1.4200e-003** | **1.4200e-003** | | **1.3700e-003** | **1.3700e-003** | **0.0000** | **7.8162** | **7.8162** | **1.2100e-003** | **0.0000** | **7.8464** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.2000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1230 | 0.1230 | 0.0000 | 0.0000 | 0.1231 |
| Worker | 5.0000e-005 | 4.0000e-005 | 3.8000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1098 | 0.1098 | 0.0000 | 0.0000 | 0.1099 |
| **Total** | **6.0000e-005** | **4.6000e-004** | **4.9000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2328** | **0.2328** | **0.0000** | **0.0000** | **0.2330** |

# 3.5 Testing - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.3300e-003 | 0.0120 | 0.0183 | 3.0000e-005 | | 4.8000e-004 | 4.8000e-004 | | 4.8000e-004 | 4.8000e-004 | 0.0000 | 2.8260 | 2.8260 | 1.0000e-004 | 0.0000 | 2.8287 |
| **Total** | **1.3300e-003** | **0.0120** | **0.0183** | **3.0000e-005** | | **4.8000e-004** | **4.8000e-004** | | **4.8000e-004** | **4.8000e-004** | **0.0000** | **2.8260** | **2.8260** | **1.0000e-004** | **0.0000** | **2.8287** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 8.0000e-005 | 5.0000e-005 | 5.6000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.1647 | 0.1647 | 0.0000 | 0.0000 | 0.1648 |
| **Total** | **8.0000e-005** | **5.0000e-005** | **5.6000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.1647** | **0.1647** | **0.0000** | **0.0000** | **0.1648** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.3300e-003 | 0.0120 | 0.0183 | 3.0000e-005 | | 4.8000e-004 | 4.8000e-004 | | 4.8000e-004 | 4.8000e-004 | 0.0000 | 2.8260 | 2.8260 | 1.0000e-004 | 0.0000 | 2.8286 |
| **Total** | **1.3300e-003** | **0.0120** | **0.0183** | **3.0000e-005** | | **4.8000e-004** | **4.8000e-004** | | **4.8000e-004** | **4.8000e-004** | **0.0000** | **2.8260** | **2.8260** | **1.0000e-004** | **0.0000** | **2.8286** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 8.0000e-005 | 5.0000e-005 | 5.6000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.1647 | 0.1647 | 0.0000 | 0.0000 | 0.1648 |
| **Total** | **8.0000e-005** | **5.0000e-005** | **5.6000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.1647** | **0.1647** | **0.0000** | **0.0000** | **0.1648** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | Unmitigated | Mitigated |
|---|---|---|---|

| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.599608 | 0.024515 | 0.205520 | 0.108091 | 0.013987 | 0.004134 | 0.021227 | 0.013186 | 0.001229 | 0.001862 | 0.004978 | 0.000953 | 0.000710 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Total | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|---|---|---|---|---|---|

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Unmitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| Category | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| Land Use | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | Mgal | MT/yr | | | |

| | | | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | Waste Disposed tons | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Coast Pump Station Upgrades
**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2029 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Coast pump station upgrades

Land Use - General light industry assumed as pump station surrogate

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Demolition - Assume 800 square feet demo of old pump station/debris off haul

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 9/1/2028 | 4/21/2028 |
| tblConstructionPhase | PhaseEndDate | 1/19/2029 | 4/28/2028 |
| tblConstructionPhase | PhaseEndDate | 6/8/2029 | 5/12/2028 |
| tblConstructionPhase | PhaseStartDate | 9/2/2028 | 4/22/2028 |
| tblConstructionPhase | PhaseStartDate | 1/20/2029 | 4/29/2028 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2028 | 1.6231 | 14.3324 | 22.4636 | 0.0375 | 0.1640 | 0.5682 | 0.6474 | 0.0350 | 0.5494 | 0.5707 | 0.0000 | 3,551.8509 | 3,551.8509 | 0.5370 | 0.0000 | 3,565.2770 |
| **Maximum** | **1.6231** | **14.3324** | **22.4636** | **0.0375** | **0.1640** | **0.5682** | **0.6474** | **0.0350** | **0.5494** | **0.5707** | **0.0000** | **3,551.8509** | **3,551.8509** | **0.5370** | **0.0000** | **3,565.2770** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2028 | 1.6231 | 14.3324 | 22.4636 | 0.0375 | 0.1212 | 0.5682 | 0.6474 | 0.0285 | 0.5494 | 0.5707 | 0.0000 | 3,551.8509 | 3,551.8509 | 0.5370 | 0.0000 | 3,565.2770 |
| **Maximum** | **1.6231** | **14.3324** | **22.4636** | **0.0375** | **0.1212** | **0.5682** | **0.6474** | **0.0285** | **0.5494** | **0.5707** | **0.0000** | **3,551.8509** | **3,551.8509** | **0.5370** | **0.0000** | **3,565.2770** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **26.10** | **0.00** | **0.00** | **18.52** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 4/1/2028 | 4/14/2028 | 5 | 10 | |
| 2 | Structural rehabilitation | Building Construction | 4/15/2028 | 4/21/2028 | 5 | 5 | |
| 3 | Building construction | Building Construction | 4/22/2028 | 4/28/2028 | 5 | 5 | |
| 4 | Testing | Building Construction | 4/29/2028 | 5/12/2028 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demolition | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Structural rehabilitation | Cranes | 0 | 0.00 | 231 | 0.29 |
| Structural rehabilitation | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Structural rehabilitation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Demolition | Excavators | 1 | 8.00 | 158 | 0.38 |
| Demolition | Pumps | 1 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Structural rehabilitation | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Structural rehabilitation | Generator Sets | | 2 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Building construction | Aerial Lifts | | 1 | 8.00 | 63 | 0.31 |
| Building construction | Generator Sets | | 2 | 8.00 | 84 | 0.74 |
| Building construction | Pavers | | 1 | 8.00 | 130 | 0.42 |
| Building construction | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Building construction | Welders | | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 9 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Structural rehabilitation | 5 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Demolition - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0778 | 0.0000 | 0.0778 | 0.0118 | 0.0000 | 0.0118 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7175 | 6.3180 | 11.4341 | 0.0180 | | 0.2690 | 0.2690 | | 0.2555 | 0.2555 | | 1,727.4842 | 1,727.4842 | 0.3824 | | 1,737.0446 |
| **Total** | **0.7175** | **6.3180** | **11.4341** | **0.0180** | **0.0778** | **0.2690** | **0.3468** | **0.0118** | **0.2555** | **0.2673** | | **1,727.4842** | **1,727.4842** | **0.3824** | | **1,737.0446** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.9500e-003 | 0.0713 | 0.0231 | 3.0000e-004 | 6.9300e-003 | 1.8000e-004 | 7.1100e-003 | 1.8900e-003 | 1.7000e-004 | 2.0700e-003 | | 32.2271 | 32.2271 | 1.3000e-003 | | 32.2595 |
| Vendor | 4.0600e-003 | 0.1683 | 0.0407 | 5.2000e-004 | 0.0135 | 2.6000e-004 | 0.0138 | 3.8800e-003 | 2.5000e-004 | 4.1300e-003 | | 54.7462 | 54.7462 | 1.8200e-003 | | 54.7918 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0273** | **0.2524** | **0.2208** | **1.3300e-003** | **0.0861** | **8.4000e-004** | **0.0870** | **0.0232** | **7.9000e-004** | **0.0240** | | **137.7409** | **137.7409** | **4.3600e-003** | | **137.8500** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0350 | 0.0000 | 0.0350 | 5.3000e-003 | 0.0000 | 5.3000e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7175 | 6.3180 | 11.4341 | 0.0180 | | 0.2690 | 0.2690 | | 0.2555 | 0.2555 | 0.0000 | 1,727.4842 | 1,727.4842 | 0.3824 | | 1,737.0446 |
| **Total** | **0.7175** | **6.3180** | **11.4341** | **0.0180** | **0.0350** | **0.2690** | **0.3040** | **5.3000e-003** | **0.2555** | **0.2608** | **0.0000** | **1,727.4842** | **1,727.4842** | **0.3824** | | **1,737.0446** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 1.9500e-003 | 0.0713 | 0.0231 | 3.0000e-004 | 6.9300e-003 | 1.8000e-004 | 7.1100e-003 | 1.8900e-003 | 1.7000e-004 | 2.0700e-003 | | 32.2271 | 32.2271 | 1.3000e-003 | | 32.2595 |
| Vendor | 4.0600e-003 | 0.1683 | 0.0407 | 5.2000e-004 | 0.0135 | 2.6000e-004 | 0.0138 | 3.8800e-003 | 2.5000e-004 | 4.1300e-003 | | 54.7462 | 54.7462 | 1.8200e-003 | | 54.7918 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0273** | **0.2524** | **0.2208** | **1.3300e-003** | **0.0861** | **8.4000e-004** | **0.0870** | **0.0232** | **7.9000e-004** | **0.0240** | | **137.7409** | **137.7409** | **4.3600e-003** | | **137.8500** |

## 3.3 Structural rehabilitation - 2028

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1055 | 9.1126 | 13.7550 | 0.0244 | | 0.3746 | 0.3746 | | 0.3746 | 0.3746 | | 2,294.8841 | 2,294.8841 | 0.0970 | | 2,297.3085 |
| **Total** | **1.1055** | **9.1126** | **13.7550** | **0.0244** | | **0.3746** | **0.3746** | | **0.3746** | **0.3746** | | **2,294.8841** | **2,294.8841** | **0.0970** | | **2,297.3085** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.0600e-003 | 0.1683 | 0.0407 | 5.2000e-004 | 0.0135 | 2.6000e-004 | 0.0138 | 3.8800e-003 | 2.5000e-004 | 4.1300e-003 | | 54.7462 | 54.7462 | 1.8200e-003 | | 54.7918 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0254** | **0.1811** | **0.1977** | **1.0300e-003** | **0.0792** | **6.6000e-004** | **0.0799** | **0.0213** | **6.2000e-004** | **0.0219** | | **105.5138** | **105.5138** | **3.0600e-003** | | **105.5904** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1055 | 9.1126 | 13.7550 | 0.0244 | | 0.3746 | 0.3746 | | 0.3746 | 0.3746 | 0.0000 | 2,294.8841 | 2,294.8841 | 0.0970 | | 2,297.3085 |
| **Total** | **1.1055** | **9.1126** | **13.7550** | **0.0244** | | **0.3746** | **0.3746** | | **0.3746** | **0.3746** | **0.0000** | **2,294.8841** | **2,294.8841** | **0.0970** | | **2,297.3085** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.0600e-003 | 0.1683 | 0.0407 | 5.2000e-004 | 0.0135 | 2.6000e-004 | 0.0138 | 3.8800e-003 | 2.5000e-004 | 4.1300e-003 | | 54.7462 | 54.7462 | 1.8200e-003 | | 54.7918 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0254** | **0.1811** | **0.1977** | **1.0300e-003** | **0.0792** | **6.6000e-004** | **0.0799** | **0.0213** | **6.2000e-004** | **0.0219** | | **105.5138** | **105.5138** | **3.0600e-003** | | **105.5904** |

# 3.4 Building construction - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5977 | 14.1513 | 22.2659 | 0.0364 | | 0.5676 | 0.5676 | | 0.5488 | 0.5488 | | 3,446.3371 | 3,446.3371 | 0.5340 | | 3,459.6866 |
| **Total** | **1.5977** | **14.1513** | **22.2659** | **0.0364** | | **0.5676** | **0.5676** | | **0.5488** | **0.5488** | | **3,446.3371** | **3,446.3371** | **0.5340** | | **3,459.6866** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.0600e-003 | 0.1683 | 0.0407 | 5.2000e-004 | 0.0135 | 2.6000e-004 | 0.0138 | 3.8800e-003 | 2.5000e-004 | 4.1300e-003 | | 54.7462 | 54.7462 | 1.8200e-003 | | 54.7918 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0254** | **0.1811** | **0.1977** | **1.0300e-003** | **0.0792** | **6.6000e-004** | **0.0799** | **0.0213** | **6.2000e-004** | **0.0219** | | **105.5138** | **105.5138** | **3.0600e-003** | | **105.5904** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5977 | 14.1513 | 22.2659 | 0.0364 | | 0.5676 | 0.5676 | | 0.5488 | 0.5488 | 0.0000 | 3,446.3371 | 3,446.3371 | 0.5340 | | 3,459.6866 |
| **Total** | **1.5977** | **14.1513** | **22.2659** | **0.0364** | | **0.5676** | **0.5676** | | **0.5488** | **0.5488** | **0.0000** | **3,446.3371** | **3,446.3371** | **0.5340** | | **3,459.6866** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.0600e-003 | 0.1683 | 0.0407 | 5.2000e-004 | 0.0135 | 2.6000e-004 | 0.0138 | 3.8800e-003 | 2.5000e-004 | 4.1300e-003 | | 54.7462 | 54.7462 | 1.8200e-003 | | 54.7918 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0254** | **0.1811** | **0.1977** | **1.0300e-003** | **0.0792** | **6.6000e-004** | **0.0799** | **0.0213** | **6.2000e-004** | **0.0219** | | **105.5138** | **105.5138** | **3.0600e-003** | | **105.5904** |

# 3.5 Testing - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0160 | 9.5700e-003 | 0.1177 | 3.8000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 38.0757 | 38.0757 | 9.3000e-004 | | 38.0990 |
| **Total** | **0.0160** | **9.5700e-003** | **0.1177** | **3.8000e-004** | **0.0493** | **3.0000e-004** | **0.0496** | **0.0131** | **2.8000e-004** | **0.0134** | | **38.0757** | **38.0757** | **9.3000e-004** | | **38.0990** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | 0.0000 | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | **0.0000** | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0160 | 9.5700e-003 | 0.1177 | 3.8000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 38.0757 | 38.0757 | 9.3000e-004 | | 38.0990 |
| **Total** | **0.0160** | **9.5700e-003** | **0.1177** | **3.8000e-004** | **0.0493** | **3.0000e-004** | **0.0496** | **0.0131** | **2.8000e-004** | **0.0134** | | **38.0757** | **38.0757** | **9.3000e-004** | | **38.0990** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.599608 | 0.024515 | 0.205520 | 0.108091 | 0.013987 | 0.004134 | 0.021227 | 0.013186 | 0.001229 | 0.001862 | 0.004978 | 0.000953 | 0.000710 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Coast Pump Station Upgrades

**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2029 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Coast pump station upgrades

Land Use - General light industry assumed as pump station surrogate

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Demolition - Assume 800 square feet demo of old pump station/debris off haul

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | PhaseEndDate | 9/1/2028 | 4/21/2028 |
| tblConstructionPhase | PhaseEndDate | 1/19/2029 | 4/28/2028 |
| tblConstructionPhase | PhaseEndDate | 6/8/2029 | 5/12/2028 |
| tblConstructionPhase | PhaseStartDate | 9/2/2028 | 4/22/2028 |
| tblConstructionPhase | PhaseStartDate | 1/20/2029 | 4/29/2028 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2028 | 1.6263 | 14.3359 | 22.4680 | 0.0374 | 0.1640 | 0.5682 | 0.6474 | 0.0350 | 0.5494 | 0.5707 | 0.0000 | 3,548.2662 | 3,548.2662 | 0.5371 | 0.0000 | 3,561.6939 |
| **Maximum** | **1.6263** | **14.3359** | **22.4680** | **0.0374** | **0.1640** | **0.5682** | **0.6474** | **0.0350** | **0.5494** | **0.5707** | **0.0000** | **3,548.2662** | **3,548.2662** | **0.5371** | **0.0000** | **3,561.6939** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2028 | 1.6263 | 14.3359 | 22.4680 | 0.0374 | 0.1212 | 0.5682 | 0.6474 | 0.0285 | 0.5494 | 0.5707 | 0.0000 | 3,548.2662 | 3,548.2662 | 0.5371 | 0.0000 | 3,561.6939 |
| **Maximum** | **1.6263** | **14.3359** | **22.4680** | **0.0374** | **0.1212** | **0.5682** | **0.6474** | **0.0285** | **0.5494** | **0.5707** | **0.0000** | **3,548.2662** | **3,548.2662** | **0.5371** | **0.0000** | **3,561.6939** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **26.10** | **0.00** | **0.00** | **18.52** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 4/1/2028 | 4/14/2028 | 5 | 10 | |
| 2 | Structural rehabilitation | Building Construction | 4/15/2028 | 4/21/2028 | 5 | 5 | |
| 3 | Building construction | Building Construction | 4/22/2028 | 4/28/2028 | 5 | 5 | |
| 4 | Testing | Building Construction | 4/29/2028 | 5/12/2028 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demolition | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Structural rehabilitation | Cranes | 0 | 0.00 | 231 | 0.29 |
| Structural rehabilitation | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Structural rehabilitation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Demolition | Excavators | 1 | 8.00 | 158 | 0.38 |
| Demolition | Pumps | 1 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Structural rehabilitation | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |

| | | | | | |
|---|---|---|---|---|---|
| Structural rehabilitation | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building construction | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Building construction | Pavers | 1 | 8.00 | 130 | 0.42 |
| Building construction | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 9 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Structural rehabilitation | 5 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Demolition - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0778 | 0.0000 | 0.0778 | 0.0118 | 0.0000 | 0.0118 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7175 | 6.3180 | 11.4341 | 0.0180 | | 0.2690 | 0.2690 | | 0.2555 | 0.2555 | | 1,727.4842 | 1,727.4842 | 0.3824 | | 1,737.0446 |
| **Total** | **0.7175** | **6.3180** | **11.4341** | **0.0180** | **0.0778** | **0.2690** | **0.3468** | **0.0118** | **0.2555** | **0.2673** | | **1,727.4842** | **1,727.4842** | **0.3824** | | **1,737.0446** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.0100e-003 | 0.0723 | 0.0241 | 3.0000e-004 | 6.9300e-003 | 1.8000e-004 | 7.1200e-003 | 1.8900e-003 | 1.8000e-004 | 2.0700e-003 | | 31.7756 | 31.7756 | 1.3300e-003 | | 31.8089 |
| Vendor | 4.3100e-003 | 0.1688 | 0.0458 | 5.0000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.6000e-004 | 4.1400e-003 | | 53.5613 | 53.5613 | 1.9400e-003 | | 53.6099 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0306** | **0.2569** | **0.2262** | **1.2900e-003** | **0.0861** | **8.6000e-004** | **0.0870** | **0.0232** | **8.1000e-004** | **0.0240** | | **133.7047** | **133.7047** | **4.4500e-003** | | **133.8162** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0350 | 0.0000 | 0.0350 | 5.3000e-003 | 0.0000 | 5.3000e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.7175 | 6.3180 | 11.4341 | 0.0180 | | 0.2690 | 0.2690 | | 0.2555 | 0.2555 | 0.0000 | 1,727.4842 | 1,727.4842 | 0.3824 | | 1,737.0446 |
| **Total** | **0.7175** | **6.3180** | **11.4341** | **0.0180** | **0.0350** | **0.2690** | **0.3040** | **5.3000e-003** | **0.2555** | **0.2608** | **0.0000** | **1,727.4842** | **1,727.4842** | **0.3824** | | **1,737.0446** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 2.0100e-003 | 0.0723 | 0.0241 | 3.0000e-004 | 6.9300e-003 | 1.8000e-004 | 7.1200e-003 | 1.8900e-003 | 1.8000e-004 | 2.0700e-003 | | 31.7756 | 31.7756 | 1.3300e-003 | | 31.8089 |
| Vendor | 4.3100e-003 | 0.1688 | 0.0458 | 5.0000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.6000e-004 | 4.1400e-003 | | 53.5613 | 53.5613 | 1.9400e-003 | | 53.6099 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0306** | **0.2569** | **0.2262** | **1.2900e-003** | **0.0861** | **8.6000e-004** | **0.0870** | **0.0232** | **8.1000e-004** | **0.0240** | | **133.7047** | **133.7047** | **4.4500e-003** | | **133.8162** |

## 3.3 Structural rehabilitation - 2028

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1055 | 9.1126 | 13.7550 | 0.0244 | | 0.3746 | 0.3746 | | 0.3746 | 0.3746 | | 2,294.8841 | 2,294.8841 | 0.0970 | | 2,297.3085 |
| **Total** | **1.1055** | **9.1126** | **13.7550** | **0.0244** | | **0.3746** | **0.3746** | | **0.3746** | **0.3746** | | **2,294.8841** | **2,294.8841** | **0.0970** | | **2,297.3085** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.3100e-003 | 0.1688 | 0.0458 | 5.0000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.6000e-004 | 4.1400e-003 | | 53.5613 | 53.5613 | 1.9400e-003 | | 53.6099 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0286** | **0.1846** | **0.2020** | **9.9000e-004** | **0.0792** | **6.8000e-004** | **0.0799** | **0.0213** | **6.3000e-004** | **0.0219** | | **101.9292** | **101.9292** | **3.1200e-003** | | **102.0073** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1055 | 9.1126 | 13.7550 | 0.0244 | | 0.3746 | 0.3746 | | 0.3746 | 0.3746 | 0.0000 | 2,294.8841 | 2,294.8841 | 0.0970 | | 2,297.3085 |
| **Total** | **1.1055** | **9.1126** | **13.7550** | **0.0244** | | **0.3746** | **0.3746** | | **0.3746** | **0.3746** | **0.0000** | **2,294.8841** | **2,294.8841** | **0.0970** | | **2,297.3085** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.3100e-003 | 0.1688 | 0.0458 | 5.0000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.6000e-004 | 4.1400e-003 | | 53.5613 | 53.5613 | 1.9400e-003 | | 53.6099 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0286** | **0.1846** | **0.2020** | **9.9000e-004** | **0.0792** | **6.8000e-004** | **0.0799** | **0.0213** | **6.3000e-004** | **0.0219** | | **101.9292** | **101.9292** | **3.1200e-003** | | **102.0073** |

## 3.4 Building construction - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5977 | 14.1513 | 22.2659 | 0.0364 | | 0.5676 | 0.5676 | | 0.5488 | 0.5488 | | 3,446.3371 | 3,446.3371 | 0.5340 | | 3,459.6866 |
| **Total** | **1.5977** | **14.1513** | **22.2659** | **0.0364** | | **0.5676** | **0.5676** | | **0.5488** | **0.5488** | | **3,446.3371** | **3,446.3371** | **0.5340** | | **3,459.6866** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.3100e-003 | 0.1688 | 0.0458 | 5.0000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.6000e-004 | 4.1400e-003 | | 53.5613 | 53.5613 | 1.9400e-003 | | 53.6099 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0286** | **0.1846** | **0.2020** | **9.9000e-004** | **0.0792** | **6.8000e-004** | **0.0799** | **0.0213** | **6.3000e-004** | **0.0219** | | **101.9292** | **101.9292** | **3.1200e-003** | | **102.0073** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5977 | 14.1513 | 22.2659 | 0.0364 | | 0.5676 | 0.5676 | | 0.5488 | 0.5488 | 0.0000 | 3,446.3371 | 3,446.3371 | 0.5340 | | 3,459.6866 |
| **Total** | **1.5977** | **14.1513** | **22.2659** | **0.0364** | | **0.5676** | **0.5676** | | **0.5488** | **0.5488** | **0.0000** | **3,446.3371** | **3,446.3371** | **0.5340** | | **3,459.6866** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.3100e-003 | 0.1688 | 0.0458 | 5.0000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.6000e-004 | 4.1400e-003 | | 53.5613 | 53.5613 | 1.9400e-003 | | 53.6099 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0286** | **0.1846** | **0.2020** | **9.9000e-004** | **0.0792** | **6.8000e-004** | **0.0799** | **0.0213** | **6.3000e-004** | **0.0219** | | **101.9292** | **101.9292** | **3.1200e-003** | | **102.0073** |

## 3.5 Testing - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0182 | 0.0119 | 0.1172 | 3.6000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 36.2759 | 36.2759 | 8.9000e-004 | | 36.2981 |
| **Total** | **0.0182** | **0.0119** | **0.1172** | **3.6000e-004** | **0.0493** | **3.0000e-004** | **0.0496** | **0.0131** | **2.8000e-004** | **0.0134** | | **36.2759** | **36.2759** | **8.9000e-004** | | **36.2981** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.2664 | 2.3955 | 3.6595 | 6.5800e-003 | | 0.0954 | 0.0954 | | 0.0954 | 0.0954 | 0.0000 | 623.0346 | 623.0346 | 0.0230 | | 623.6101 |
| **Total** | **0.2664** | **2.3955** | **3.6595** | **6.5800e-003** | | **0.0954** | **0.0954** | | **0.0954** | **0.0954** | **0.0000** | **623.0346** | **623.0346** | **0.0230** | | **623.6101** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0182 | 0.0119 | 0.1172 | 3.6000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 36.2759 | 36.2759 | 8.9000e-004 | | 36.2981 |
| **Total** | **0.0182** | **0.0119** | **0.1172** | **3.6000e-004** | **0.0493** | **3.0000e-004** | **0.0496** | **0.0131** | **2.8000e-004** | **0.0134** | | **36.2759** | **36.2759** | **8.9000e-004** | | **36.2981** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.599608 | 0.024515 | 0.205520 | 0.108091 | 0.013987 | 0.004134 | 0.021227 | 0.013186 | 0.001229 | 0.001862 | 0.004978 | 0.000953 | 0.000710 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

### Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

### Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

### User Defined Equipment

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station Upgrades SCWD-SqCWD
## Santa Cruz County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

**Urbanization** Urban **Wind Speed (m/s)** 1.8 **Precipitation Freq (Days)** 61

**Climate Zone** 5 **Operational Year** 2023

**Utility Company** Pacific Gas & Electric Company

**CO2 Intensity (lb/MWhr)** 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Pump station upgrades for SCWD-SqCWD intertie

Land Use - General light industry assumed as pump station surrogate

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Demolition - Assume 800 square feet demo of old pump station/debris off haul

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 9/6/2022 | 4/22/2022 |
| tblConstructionPhase | PhaseStartDate | 4/20/2022 | 4/17/2022 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

# 2.0 Emissions Summary

## 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0140 | 0.1221 | 0.1606 | 2.7000e-004 | 1.3100e-003 | 6.1100e-003 | 7.4100e-003 | 3.1000e-004 | 5.9300e-003 | 6.2300e-003 | 0.0000 | 23.5737 | 23.5737 | 3.4200e-003 | 0.0000 | 23.6591 |
| **Maximum** | **0.0140** | **0.1221** | **0.1606** | **2.7000e-004** | **1.3100e-003** | **6.1100e-003** | **7.4100e-003** | **3.1000e-004** | **5.9300e-003** | **6.2300e-003** | **0.0000** | **23.5737** | **23.5737** | **3.4200e-003** | **0.0000** | **23.6591** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2022 | 0.0140 | 0.1221 | 0.1606 | 2.7000e-004 | 1.0900e-003 | 6.1100e-003 | 7.2000e-003 | 2.7000e-004 | 5.9300e-003 | 6.2000e-003 | 0.0000 | 23.5737 | 23.5737 | 3.4200e-003 | 0.0000 | 23.6591 |
| **Maximum** | **0.0140** | **0.1221** | **0.1606** | **2.7000e-004** | **1.0900e-003** | **6.1100e-003** | **7.2000e-003** | **2.7000e-004** | **5.9300e-003** | **6.2000e-003** | **0.0000** | **23.5737** | **23.5737** | **3.4200e-003** | **0.0000** | **23.6591** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **16.79** | **0.00** | **2.83** | **12.90** | **0.00** | **0.48** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **4-1-2022** | **6-30-2022** | 0.1233 | 0.1233 |
| | | **Highest** | 0.1233 | 0.1233 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 4/1/2022 | 4/14/2022 | 5 | 10 | |
| 2 | Structural rehabilitation | Building Construction | 4/17/2022 | 4/22/2022 | 5 | 5 | |
| 3 | Building construction | Building Construction | 4/24/2022 | 4/29/2022 | 5 | 5 | |
| 4 | Testing | Building Construction | 5/1/2022 | 5/6/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demolition | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Testing | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | | 2 | 8.00 | 97 | 0.37 |
| Structural rehabilitation | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Structural rehabilitation | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Structural rehabilitation | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Demolition | Excavators | | 1 | 8.00 | 158 | 0.38 |
| Demolition | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Structural rehabilitation | Cement and Mortar Mixers | | 1 | 8.00 | 9 | 0.56 |
| Structural rehabilitation | Generator Sets | | 2 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Building construction | Aerial Lifts | | 1 | 8.00 | 63 | 0.31 |
| Building construction | Generator Sets | | 2 | 8.00 | 84 | 0.74 |
| Building construction | Pavers | | 1 | 8.00 | 130 | 0.42 |
| Building construction | Pumps | | 1 | 8.00 | 84 | 0.74 |
| Building construction | Welders | | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 9 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Structural rehabilitation | 5 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Demolition - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 3.9000e-004 | 0.0000 | 3.9000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 4.4200e-003 | 0.0405 | 0.0574 | 9.0000e-005 | | 2.1100e-003 | 2.1100e-003 | | 2.0000e-003 | 2.0000e-003 | 0.0000 | 7.8382 | 7.8382 | 1.7700e-003 | 0.0000 | 7.8823 |
| **Total** | **4.4200e-003** | **0.0405** | **0.0574** | **9.0000e-005** | **3.9000e-004** | **2.1100e-003** | **2.5000e-003** | **6.0000e-005** | **2.0000e-003** | **2.0600e-003** | **0.0000** | **7.8382** | **7.8382** | **1.7700e-003** | **0.0000** | **7.8823** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 5.9000e-004 | 1.4000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1536 | 0.1536 | 1.0000e-005 | 0.0000 | 0.1537 |
| Vendor | 3.0000e-005 | 1.1600e-003 | 3.0000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2567 | 0.2567 | 1.0000e-005 | 0.0000 | 0.2570 |
| Worker | 1.6000e-004 | 1.3000e-004 | 1.2300e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2742 | 0.2742 | 1.0000e-005 | 0.0000 | 0.2744 |
| **Total** | **2.0000e-004** | **1.8800e-003** | **1.6700e-003** | **0.0000** | **4.2000e-004** | **0.0000** | **4.3000e-004** | **1.1000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **0.6845** | **0.6845** | **3.0000e-005** | **0.0000** | **0.6851** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fugitive Dust | | | | | 1.8000e-004 | 0.0000 | 1.8000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 4.4200e-003 | 0.0405 | 0.0574 | 9.0000e-005 | | 2.1100e-003 | 2.1100e-003 | | 2.0000e-003 | 2.0000e-003 | 0.0000 | 7.8382 | 7.8382 | 1.7700e-003 | 0.0000 | 7.8823 |
| **Total** | **4.4200e-003** | **0.0405** | **0.0574** | **9.0000e-005** | **1.8000e-004** | **2.1100e-003** | **2.2900e-003** | **3.0000e-005** | **2.0000e-003** | **2.0300e-003** | **0.0000** | **7.8382** | **7.8382** | **1.7700e-003** | **0.0000** | **7.8823** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | tons/yr | | | | | | | | MT/yr | | |
| Hauling | 1.0000e-005 | 5.9000e-004 | 1.4000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 4.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1536 | 0.1536 | 1.0000e-005 | 0.0000 | 0.1537 |
| Vendor | 3.0000e-005 | 1.1600e-003 | 3.0000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2567 | 0.2567 | 1.0000e-005 | 0.0000 | 0.2570 |
| Worker | 1.6000e-004 | 1.3000e-004 | 1.2300e-003 | 0.0000 | 3.2000e-004 | 0.0000 | 3.2000e-004 | 8.0000e-005 | 0.0000 | 9.0000e-005 | 0.0000 | 0.2742 | 0.2742 | 1.0000e-005 | 0.0000 | 0.2744 |
| **Total** | **2.0000e-004** | **1.8800e-003** | **1.6700e-003** | **0.0000** | **4.2000e-004** | **0.0000** | **4.3000e-004** | **1.1000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **0.6845** | **0.6845** | **3.0000e-005** | **0.0000** | **0.6851** |

## 3.3 Structural rehabilitation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | | | | | | tons/yr | | | | | | | | MT/yr | | |
| Off-Road | 3.3600e-003 | 0.0277 | 0.0345 | 6.0000e-005 | | 1.4300e-003 | 1.4300e-003 | | 1.4300e-003 | 1.4300e-003 | 0.0000 | 5.2047 | 5.2047 | 2.7000e-004 | 0.0000 | 5.2116 |
| **Total** | **3.3600e-003** | **0.0277** | **0.0345** | **6.0000e-005** | | **1.4300e-003** | **1.4300e-003** | | **1.4300e-003** | **1.4300e-003** | **0.0000** | **5.2047** | **5.2047** | **2.7000e-004** | **0.0000** | **5.2116** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 3.3600e-003 | 0.0277 | 0.0345 | 6.0000e-005 | | 1.4300e-003 | 1.4300e-003 | | 1.4300e-003 | 1.4300e-003 | 0.0000 | 5.2047 | 5.2047 | 2.7000e-004 | 0.0000 | 5.2116 |
| **Total** | **3.3600e-003** | **0.0277** | **0.0345** | **6.0000e-005** | | **1.4300e-003** | **1.4300e-003** | | **1.4300e-003** | **1.4300e-003** | **0.0000** | **5.2047** | **5.2047** | **2.7000e-004** | **0.0000** | **5.2116** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## 3.4 Building construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.9300e-003 | 0.0433 | 0.0559 | 9.0000e-005 | | 2.1800e-003 | 2.1800e-003 | | 2.1100e-003 | 2.1100e-003 | 0.0000 | 7.7996 | 7.7996 | 1.2600e-003 | 0.0000 | 7.8312 |
| **Total** | **4.9300e-003** | **0.0433** | **0.0559** | **9.0000e-005** | | **2.1800e-003** | **2.1800e-003** | | **2.1100e-003** | **2.1100e-003** | **0.0000** | **7.7996** | **7.7996** | **1.2600e-003** | **0.0000** | **7.8312** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.9300e-003 | 0.0433 | 0.0559 | 9.0000e-005 | | 2.1800e-003 | 2.1800e-003 | | 2.1100e-003 | 2.1100e-003 | 0.0000 | 7.7996 | 7.7996 | 1.2600e-003 | 0.0000 | 7.8312 |
| **Total** | **4.9300e-003** | **0.0433** | **0.0559** | **9.0000e-005** | | **2.1800e-003** | **2.1800e-003** | | **2.1100e-003** | **2.1100e-003** | **0.0000** | **7.7996** | **7.7996** | **1.2600e-003** | **0.0000** | **7.8312** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 2.0000e-005 | 5.8000e-004 | 1.5000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1284 | 0.1284 | 0.0000 | 0.0000 | 0.1285 |
| Worker | 8.0000e-005 | 7.0000e-005 | 6.1000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1371 | 0.1371 | 1.0000e-005 | 0.0000 | 0.1372 |
| **Total** | **1.0000e-004** | **6.5000e-004** | **7.6000e-004** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.2654** | **0.2654** | **1.0000e-005** | **0.0000** | **0.2657** |

## 3.5 Testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 8.2000e-004 | 7.3200e-003 | 9.1900e-003 | 2.0000e-005 | | 3.7000e-004 | 3.7000e-004 | | 3.7000e-004 | 3.7000e-004 | 0.0000 | 1.4130 | 1.4130 | 7.0000e-005 | 0.0000 | 1.4147 |
| **Total** | **8.2000e-004** | **7.3200e-003** | **9.1900e-003** | **2.0000e-005** | | **3.7000e-004** | **3.7000e-004** | | **3.7000e-004** | **3.7000e-004** | **0.0000** | **1.4130** | **1.4130** | **7.0000e-005** | **0.0000** | **1.4147** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **6.0000e-005** | **5.0000e-005** | **4.6000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1028** | **0.1028** | **0.0000** | **0.0000** | **0.1029** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.2000e-004 | 7.3200e-003 | 9.1900e-003 | 2.0000e-005 | | 3.7000e-004 | 3.7000e-004 | | 3.7000e-004 | 3.7000e-004 | 0.0000 | 1.4130 | 1.4130 | 7.0000e-005 | 0.0000 | 1.4147 |
| **Total** | **8.2000e-004** | **7.3200e-003** | **9.1900e-003** | **2.0000e-005** | | **3.7000e-004** | **3.7000e-004** | | **3.7000e-004** | **3.7000e-004** | **0.0000** | **1.4130** | **1.4130** | **7.0000e-005** | **0.0000** | **1.4147** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.0000e-005 | 5.0000e-005 | 4.6000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.1028 | 0.1028 | 0.0000 | 0.0000 | 0.1029 |
| **Total** | **6.0000e-005** | **5.0000e-005** | **4.6000e-004** | **0.0000** | **1.2000e-004** | **0.0000** | **1.2000e-004** | **3.0000e-005** | **0.0000** | **3.0000e-005** | **0.0000** | **0.1028** | **0.1028** | **0.0000** | **0.0000** | **0.1029** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | Unmitigated | Mitigated |
|---|---|---|---|

| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Unmitigated | 9.2000e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 1.3900e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **9.2000e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| Category | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| Land Use | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | Mgal | MT/yr | | | |

| | | | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station Upgrades SCWD-SqCWD

**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Pump station upgrades for SCWD-SqCWD intertie

Land Use - General light industry assumed as pump station surrogate

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Demolition - Assume 800 square feet demo of old pump station/debris off haul

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
| --- | --- | --- | --- |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 9/6/2022 | 4/22/2022 |
| tblConstructionPhase | PhaseStartDate | 4/20/2022 | 4/17/2022 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| | | | |
|---|---|---|---|
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.0095 | 17.5799 | 22.6587 | 0.0375 | 0.1640 | 0.8737 | 0.9529 | 0.0350 | 0.8449 | 0.8662 | 0.0000 | 3,559.5300 | 3,559.5300 | 0.5609 | 0.0000 | 3,573.5525 |
| **Maximum** | **2.0095** | **17.5799** | **22.6587** | **0.0375** | **0.1640** | **0.8737** | **0.9529** | **0.0350** | **0.8449** | **0.8662** | **0.0000** | **3,559.5300** | **3,559.5300** | **0.5609** | **0.0000** | **3,573.5525** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.0095 | 17.5799 | 22.6587 | 0.0375 | 0.1212 | 0.8737 | 0.9529 | 0.0285 | 0.8449 | 0.8662 | 0.0000 | 3,559.5300 | 3,559.5300 | 0.5609 | 0.0000 | 3,573.5524 |
| **Maximum** | **2.0095** | **17.5799** | **22.6587** | **0.0375** | **0.1212** | **0.8737** | **0.9529** | **0.0285** | **0.8449** | **0.8662** | **0.0000** | **3,559.5300** | **3,559.5300** | **0.5609** | **0.0000** | **3,573.5524** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **26.11** | **0.00** | **0.00** | **18.52** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 4/1/2022 | 4/14/2022 | 5 | 10 | |
| 2 | Structural rehabilitation | Building Construction | 4/17/2022 | 4/22/2022 | 5 | 5 | |
| 3 | Building construction | Building Construction | 4/24/2022 | 4/29/2022 | 5 | 5 | |
| 4 | Testing | Building Construction | 5/1/2022 | 5/6/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demolition | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Structural rehabilitation | Cranes | 0 | 0.00 | 231 | 0.29 |
| Structural rehabilitation | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Structural rehabilitation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Demolition | Excavators | 1 | 8.00 | 158 | 0.38 |
| Demolition | Pumps | 1 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Structural rehabilitation | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |

| | | | | | |
|---|---|---|---|---|---|
| Structural rehabilitation | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building construction | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Building construction | Pavers | 1 | 8.00 | 130 | 0.42 |
| Building construction | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 9 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Structural rehabilitation | 5 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Demolition - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0778 | 0.0000 | 0.0778 | 0.0118 | 0.0000 | 0.0118 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8848 | 8.1060 | 11.4792 | 0.0180 | | 0.4223 | 0.4223 | | 0.4009 | 0.4009 | | 1,728.0278 | 1,728.0278 | 0.3892 | | 1,737.7571 |
| **Total** | **0.8848** | **8.1060** | **11.4792** | **0.0180** | **0.0778** | **0.4223** | **0.5001** | **0.0118** | **0.4009** | **0.4127** | | **1,728.0278** | **1,728.0278** | **0.3892** | | **1,737.7571** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.8400e-003 | 0.1150 | 0.0265 | 3.2000e-004 | 6.9300e-003 | 4.3000e-004 | 7.3600e-003 | 1.8900e-003 | 4.1000e-004 | 2.3100e-003 | | 34.0528 | 34.0528 | 1.3500e-003 | | 34.0867 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0402** | **0.3676** | **0.3360** | **1.5000e-003** | **0.0861** | **1.6300e-003** | **0.0878** | **0.0232** | **1.5400e-003** | **0.0248** | | **154.5453** | **154.5453** | **5.7800e-003** | | **154.6899** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0350 | 0.0000 | 0.0350 | 5.3000e-003 | 0.0000 | 5.3000e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8848 | 8.1060 | 11.4792 | 0.0180 | | 0.4223 | 0.4223 | | 0.4009 | 0.4009 | 0.0000 | 1,728.0278 | 1,728.0278 | 0.3892 | | 1,737.7571 |
| **Total** | **0.8848** | **8.1060** | **11.4792** | **0.0180** | **0.0350** | **0.4223** | **0.4573** | **5.3000e-003** | **0.4009** | **0.4062** | **0.0000** | **1,728.0278** | **1,728.0278** | **0.3892** | | **1,737.7571** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 2.8400e-003 | 0.1150 | 0.0265 | 3.2000e-004 | 6.9300e-003 | 4.3000e-004 | 7.3600e-003 | 1.8900e-003 | 4.1000e-004 | 2.3100e-003 | | 34.0528 | 34.0528 | 1.3500e-003 | | 34.0867 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0402** | **0.3676** | **0.3360** | **1.5000e-003** | **0.0861** | **1.6300e-003** | **0.0878** | **0.0232** | **1.5400e-003** | **0.0248** | | **154.5453** | **154.5453** | **5.7800e-003** | | **154.6899** |

## 3.3 Structural rehabilitation - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.3434 | 11.0715 | 13.8103 | 0.0244 | | 0.5728 | 0.5728 | | 0.5728 | 0.5728 | | 2,294.8841 | 2,294.8841 | 0.1207 | | 2,297.9009 |
| **Total** | **1.3434** | **11.0715** | **13.8103** | **0.0244** | | **0.5728** | **0.5728** | | **0.5728** | **0.5728** | | **2,294.8841** | **2,294.8841** | **0.1207** | | **2,297.9009** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.3434 | 11.0715 | 13.8103 | 0.0244 | | 0.5728 | 0.5728 | | 0.5728 | 0.5728 | 0.0000 | 2,294.8841 | 2,294.8841 | 0.1207 | | 2,297.9009 |
| **Total** | **1.3434** | **11.0715** | **13.8103** | **0.0244** | | **0.5728** | **0.5728** | | **0.5728** | **0.5728** | **0.0000** | **2,294.8841** | **2,294.8841** | **0.1207** | | **2,297.9009** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## 3.4 Building construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9721 | 17.3273 | 22.3492 | 0.0364 | | 0.8725 | 0.8725 | | 0.8437 | 0.8437 | | 3,439.0375 | 3,439.0375 | 0.5565 | | 3,452.9492 |
| **Total** | **1.9721** | **17.3273** | **22.3492** | **0.0364** | | **0.8725** | **0.8725** | | **0.8437** | **0.8437** | | **3,439.0375** | **3,439.0375** | **0.5565** | | **3,452.9492** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9721 | 17.3273 | 22.3492 | 0.0364 | | 0.8725 | 0.8725 | | 0.8437 | 0.8437 | 0.0000 | 3,439.0375 | 3,439.0375 | 0.5565 | | 3,452.9492 |
| **Total** | **1.9721** | **17.3273** | **22.3492** | **0.0364** | | **0.8725** | **0.8725** | | **0.8437** | **0.8437** | **0.0000** | **3,439.0375** | **3,439.0375** | **0.5565** | | **3,452.9492** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.3500e-003 | 0.2293 | 0.0562 | 5.4000e-004 | 0.0135 | 6.8000e-004 | 0.0142 | 3.8800e-003 | 6.5000e-004 | 4.5300e-003 | | 57.1058 | 57.1058 | 2.1300e-003 | | 57.1591 |
| Worker | 0.0310 | 0.0234 | 0.2533 | 6.4000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 63.3866 | 63.3866 | 2.3000e-003 | | 63.4441 |
| **Total** | **0.0373** | **0.2526** | **0.3095** | **1.1800e-003** | **0.0792** | **1.2000e-003** | **0.0804** | **0.0213** | **1.1300e-003** | **0.0224** | | **120.4924** | **120.4924** | **4.4300e-003** | | **120.6033** |

# 3.5 Testing - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0232** | **0.0175** | **0.1899** | **4.8000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **47.5400** | **47.5400** | **1.7300e-003** | | **47.5831** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | 0.0000 | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | **0.0000** | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0232 | 0.0175 | 0.1899 | 4.8000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 47.5400 | 47.5400 | 1.7300e-003 | | 47.5831 |
| **Total** | **0.0232** | **0.0175** | **0.1899** | **4.8000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **47.5400** | **47.5400** | **1.7300e-003** | | **47.5831** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

### Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

### Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

### User Defined Equipment

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Pump Station Upgrades SCWD-SqCWD
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2023 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Pump station upgrades for SCWD-SqCWD intertie

Land Use - General light industry assumed as pump station surrogate

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Demolition - Assume 800 square feet demo of old pump station/debris off haul

Architectural Coating - Default

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 9/6/2022 | 4/22/2022 |
| tblConstructionPhase | PhaseStartDate | 4/20/2022 | 4/17/2022 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblOffRoadEquipment | LoadFactor | 0.38 | 0.38 |
| tblOffRoadEquipment | LoadFactor | 0.31 | 0.31 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Excavators |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cement and Mortar Mixers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Aerial Lifts |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pavers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pumps |
| tblOffRoadEquipment | OffRoadEquipmentType | | Welders |
| tblOffRoadEquipment | OffRoadEquipmentType | | Generator Sets |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 1.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |

| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |
|---|---|---|---|

## 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.0137 | 17.5873 | 22.6688 | 0.0375 | 0.1640 | 0.8737 | 0.9529 | 0.0350 | 0.8449 | 0.8662 | 0.0000 | 3,555.3207 | 3,555.3207 | 0.5610 | 0.0000 | 3,569.3450 |
| **Maximum** | **2.0137** | **17.5873** | **22.6688** | **0.0375** | **0.1640** | **0.8737** | **0.9529** | **0.0350** | **0.8449** | **0.8662** | **0.0000** | **3,555.3207** | **3,555.3207** | **0.5610** | **0.0000** | **3,569.3450** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2022 | 2.0137 | 17.5873 | 22.6688 | 0.0375 | 0.1212 | 0.8737 | 0.9529 | 0.0285 | 0.8449 | 0.8662 | 0.0000 | 3,555.3207 | 3,555.3207 | 0.5610 | 0.0000 | 3,569.3450 |
| **Maximum** | **2.0137** | **17.5873** | **22.6688** | **0.0375** | **0.1212** | **0.8737** | **0.9529** | **0.0285** | **0.8449** | **0.8662** | **0.0000** | **3,555.3207** | **3,555.3207** | **0.5610** | **0.0000** | **3,569.3450** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **26.11** | **0.00** | **0.00** | **18.52** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 4/1/2022 | 4/14/2022 | 5 | 10 | |
| 2 | Structural rehabilitation | Building Construction | 4/17/2022 | 4/22/2022 | 5 | 5 | |
| 3 | Building construction | Building Construction | 4/24/2022 | 4/29/2022 | 5 | 5 | |
| 4 | Testing | Building Construction | 5/1/2022 | 5/6/2022 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 0 | 0.00 | 81 | 0.73 |
| Demolition | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Building construction | Cranes | 0 | 0.00 | 231 | 0.29 |
| Testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Building construction | Forklifts | 1 | 8.00 | 89 | 0.20 |
| Testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Building construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Structural rehabilitation | Cranes | 0 | 0.00 | 231 | 0.29 |
| Structural rehabilitation | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Structural rehabilitation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Demolition | Excavators | 1 | 8.00 | 158 | 0.38 |
| Demolition | Pumps | 1 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Structural rehabilitation | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Structural rehabilitation | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Structural rehabilitation | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Aerial Lifts | 1 | 8.00 | 63 | 0.31 |
| Building construction | Generator Sets | 2 | 8.00 | 84 | 0.74 |
| Building construction | Pavers | 1 | 8.00 | 130 | 0.42 |
| Building construction | Pumps | 1 | 8.00 | 84 | 0.74 |
| Building construction | Welders | 1 | 8.00 | 46 | 0.45 |
| Testing | Generator Sets | 1 | 8.00 | 84 | 0.74 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Building construction | 9 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Structural rehabilitation | 5 | 8.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Demolition | 4 | 8.00 | 2.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Testing | 1 | 6.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Demolition - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0778 | 0.0000 | 0.0778 | 0.0118 | 0.0000 | 0.0118 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8848 | 8.1060 | 11.4792 | 0.0180 | | 0.4223 | 0.4223 | | 0.4009 | 0.4009 | | 1,728.0278 | 1,728.0278 | 0.3892 | | 1,737.7571 |
| **Total** | **0.8848** | **8.1060** | **11.4792** | **0.0180** | **0.0778** | **0.4223** | **0.5001** | **0.0118** | **0.4009** | **0.4127** | | **1,728.0278** | **1,728.0278** | **0.3892** | | **1,737.7571** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.9200e-003 | 0.1172 | 0.0279 | 3.1000e-004 | 6.9300e-003 | 4.5000e-004 | 7.3700e-003 | 1.8900e-003 | 4.3000e-004 | 2.3200e-003 | | 33.5873 | 33.5873 | 1.4000e-003 | | 33.6223 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0444** | **0.3772** | **0.3475** | **1.4500e-003** | **0.0861** | **1.6900e-003** | **0.0878** | **0.0232** | **1.6000e-003** | **0.0248** | | **149.8704** | **149.8704** | **5.9100e-003** | | **150.0181** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0350 | 0.0000 | 0.0350 | 5.3000e-003 | 0.0000 | 5.3000e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.8848 | 8.1060 | 11.4792 | 0.0180 | | 0.4223 | 0.4223 | | 0.4009 | 0.4009 | 0.0000 | 1,728.0278 | 1,728.0278 | 0.3892 | | 1,737.7571 |
| **Total** | **0.8848** | **8.1060** | **11.4792** | **0.0180** | **0.0350** | **0.4223** | **0.4573** | **5.3000e-003** | **0.4009** | **0.4062** | **0.0000** | **1,728.0278** | **1,728.0278** | **0.3892** | | **1,737.7571** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 2.9200e-003 | 0.1172 | 0.0279 | 3.1000e-004 | 6.9300e-003 | 4.5000e-004 | 7.3700e-003 | 1.8900e-003 | 4.3000e-004 | 2.3200e-003 | | 33.5873 | 33.5873 | 1.4000e-003 | | 33.6223 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0444** | **0.3772** | **0.3475** | **1.4500e-003** | **0.0861** | **1.6900e-003** | **0.0878** | **0.0232** | **1.6000e-003** | **0.0248** | | **149.8704** | **149.8704** | **5.9100e-003** | | **150.0181** |

### 3.3 Structural rehabilitation - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.3434 | 11.0715 | 13.8103 | 0.0244 | | 0.5728 | 0.5728 | | 0.5728 | 0.5728 | | 2,294.8841 | 2,294.8841 | 0.1207 | | 2,297.9009 |
| **Total** | **1.3434** | **11.0715** | **13.8103** | **0.0244** | | **0.5728** | **0.5728** | | **0.5728** | **0.5728** | | **2,294.8841** | **2,294.8841** | **0.1207** | | **2,297.9009** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.3434 | 11.0715 | 13.8103 | 0.0244 | | 0.5728 | 0.5728 | | 0.5728 | 0.5728 | 0.0000 | 2,294.8841 | 2,294.8841 | 0.1207 | | 2,297.9009 |
| **Total** | **1.3434** | **11.0715** | **13.8103** | **0.0244** | | **0.5728** | **0.5728** | | **0.5728** | **0.5728** | **0.0000** | **2,294.8841** | **2,294.8841** | **0.1207** | | **2,297.9009** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

# 3.4 Building construction - 2022

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9721 | 17.3273 | 22.3492 | 0.0364 | | 0.8725 | 0.8725 | | 0.8437 | 0.8437 | | 3,439.0375 | 3,439.0375 | 0.5565 | | 3,452.9492 |
| **Total** | **1.9721** | **17.3273** | **22.3492** | **0.0364** | | **0.8725** | **0.8725** | | **0.8437** | **0.8437** | | **3,439.0375** | **3,439.0375** | **0.5565** | | **3,452.9492** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.9721 | 17.3273 | 22.3492 | 0.0364 | | 0.8725 | 0.8725 | | 0.8437 | 0.8437 | 0.0000 | 3,439.0375 | 3,439.0375 | 0.5565 | | 3,452.9492 |
| **Total** | **1.9721** | **17.3273** | **22.3492** | **0.0364** | | **0.8725** | **0.8725** | | **0.8437** | **0.8437** | **0.0000** | **3,439.0375** | **3,439.0375** | **0.5565** | | **3,452.9492** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 6.7600e-003 | 0.2309 | 0.0639 | 5.3000e-004 | 0.0135 | 7.2000e-004 | 0.0142 | 3.8800e-003 | 6.9000e-004 | 4.5600e-003 | | 55.8885 | 55.8885 | 2.2800e-003 | | 55.9455 |
| Worker | 0.0348 | 0.0291 | 0.2557 | 6.1000e-004 | 0.0657 | 5.2000e-004 | 0.0662 | 0.0174 | 4.8000e-004 | 0.0179 | | 60.3946 | 60.3946 | 2.2300e-003 | | 60.4504 |
| **Total** | **0.0415** | **0.2600** | **0.3196** | **1.1400e-003** | **0.0792** | **1.2400e-003** | **0.0804** | **0.0213** | **1.1700e-003** | **0.0225** | | **116.2831** | **116.2831** | **4.5100e-003** | | **116.3958** |

## 3.5 Testing - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0261** | **0.0218** | **0.1918** | **4.6000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **45.2960** | **45.2960** | **1.6700e-003** | | **45.3378** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3300 | 2.9283 | 3.6759 | 6.5800e-003 | | 0.1469 | 0.1469 | | 0.1469 | 0.1469 | 0.0000 | 623.0346 | 623.0346 | 0.0296 | | 623.7746 |
| **Total** | **0.3300** | **2.9283** | **3.6759** | **6.5800e-003** | | **0.1469** | **0.1469** | | **0.1469** | **0.1469** | **0.0000** | **623.0346** | **623.0346** | **0.0296** | | **623.7746** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0261 | 0.0218 | 0.1918 | 4.6000e-004 | 0.0493 | 3.9000e-004 | 0.0497 | 0.0131 | 3.6000e-004 | 0.0134 | | 45.2960 | 45.2960 | 1.6700e-003 | | 45.3378 |
| **Total** | **0.0261** | **0.0218** | **0.1918** | **4.6000e-004** | **0.0493** | **3.9000e-004** | **0.0497** | **0.0131** | **3.6000e-004** | **0.0134** | | **45.2960** | **45.2960** | **1.6700e-003** | | **45.3378** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| General Light Industry | 0.575986 | 0.028505 | 0.206594 | 0.118540 | 0.020331 | 0.004884 | 0.021052 | 0.012380 | 0.001237 | 0.002682 | 0.005754 | 0.000999 | 0.001058 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0504 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 7.6200e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0504** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
| --- | --- | --- | --- | --- | --- | --- |

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
| --- | --- | --- | --- | --- | --- |

**User Defined Equipment**

| Equipment Type | Number |
| --- | --- |

## 11.0 Vegetation

# SCWR - Felton Diversion
## Santa Cruz County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Felton diversion improvement construction

Land Use - Surrogate land use for Felton diversion facility improvements

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - Assumed 0.5 acre would be disturbed and 64 CY material exported

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 1000 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 3000 | 0 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 3.00 |
| tblConstructionPhase | PhaseEndDate | 6/28/2027 | 7/3/2027 |
| tblConstructionPhase | PhaseEndDate | 11/15/2027 | 7/9/2027 |
| tblConstructionPhase | PhaseEndDate | 4/3/2028 | 7/17/2027 |
| tblConstructionPhase | PhaseEndDate | 8/21/2028 | 7/31/2027 |
| tblConstructionPhase | PhaseEndDate | 5/28/2029 | 8/4/2027 |
| tblConstructionPhase | PhaseStartDate | 6/29/2027 | 7/5/2027 |
| tblConstructionPhase | PhaseStartDate | 11/16/2027 | 7/11/2027 |
| tblConstructionPhase | PhaseStartDate | 4/4/2028 | 7/18/2027 |
| tblConstructionPhase | PhaseStartDate | 1/9/2029 | 8/1/2027 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 64.00 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.29 | 0.29 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Trenchers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Plate Compactors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pressure Washers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 8.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 8.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2027 | 0.0119 | 0.1045 | 0.1207 | 2.5000e-004 | 1.7800e-003 | 4.4800e-003 | 6.2600e-003 | 4.3000e-004 | 4.2800e-003 | 4.7100e-003 | 0.0000 | 21.5522 | 21.5522 | 3.4500e-003 | 0.0000 | 21.6383 |
| **Maximum** | **0.0119** | **0.1045** | **0.1207** | **2.5000e-004** | **1.7800e-003** | **4.4800e-003** | **6.2600e-003** | **4.3000e-004** | **4.2800e-003** | **4.7100e-003** | **0.0000** | **21.5522** | **21.5522** | **3.4500e-003** | **0.0000** | **21.6383** |

**Mitigated Construction**

| Year | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2027 | 0.0119 | 0.1045 | 0.1207 | 2.5000e-004 | 1.6300e-003 | 4.4800e-003 | 6.1100e-003 | 4.1000e-004 | 4.2800e-003 | 4.7000e-003 | 0.0000 | 21.5522 | 21.5522 | 3.4500e-003 | 0.0000 | 21.6383 |
| **Maximum** | **0.0119** | **0.1045** | **0.1207** | **2.5000e-004** | **1.6300e-003** | **4.4800e-003** | **6.1100e-003** | **4.1000e-004** | **4.2800e-003** | **4.7000e-003** | **0.0000** | **21.5522** | **21.5522** | **3.4500e-003** | **0.0000** | **21.6383** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **8.43** | **0.00** | **2.40** | **4.65** | **0.00** | **0.21** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **6-27-2027** | **9-26-2027** | 0.1111 | 0.1111 |
| | | **Highest** | 0.1111 | 0.1111 |

## 2.2 Overall Operational

**Unmitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Total | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **7.8100e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 6/27/2027 | 7/3/2027 | 5 | 5 | |
| 2 | Fish screen replacement | Building Construction | 7/5/2027 | 7/9/2027 | 5 | 5 | |
| 3 | Install traveling brush | Building Construction | 7/11/2027 | 7/17/2027 | 5 | 5 | |
| 4 | Downstream outmigration route | Building Construction | 7/18/2027 | 7/31/2027 | 5 | 10 | |
| 5 | Site cleanup and testing | Building Construction | 8/1/2027 | 8/4/2027 | 5 | 3 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Install traveling brush | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Site Preparation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Install traveling brush | Concrete/Industrial Saws | 1 | 2.00 | 81 | 0.73 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Fish screen replacement | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Install traveling brush | Trenchers | 1 | 2.00 | 78 | 0.50 |
| Fish screen replacement | Cranes | 1 | 4.00 | 231 | 0.29 |
| Fish screen replacement | Forklifts | 1 | 4.00 | 89 | 0.20 |
| Fish screen replacement | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Install traveling brush | Plate Compactors | 1 | 2.00 | 8 | 0.43 |
| Fish screen replacement | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Install traveling brush | Cranes | 1 | 4.00 | 231 | 0.29 |
| Downstream outmigration route | Other Construction Equipment | 1 | 8.00 | 172 | 0.42 |
| Install traveling brush | Forklifts | 1 | 4.00 | 89 | 0.20 |
| Install traveling brush | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Install traveling brush | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Downstream outmigration route | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Downstream outmigration route | Cement and Mortar Mixers | 1 | 1.00 | 9 | 0.56 |
| Downstream outmigration route | Cranes | 1 | 8.00 | 231 | 0.29 |
| Downstream outmigration route | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Downstream outmigration route | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Downstream outmigration route | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Cranes | 1 | 8.00 | 231 | 0.29 |

| | | | | | |
|---|---|---|---|---|---|
| Site Preparation | Pressure Washers | 1 | 8.00 | 13 | 0.30 |
| Site cleanup and testing | Cranes | 1 | 8.00 | 231 | 0.29 |
| Site cleanup and testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Site cleanup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 3 | 10.00 | 0.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Fish screen replacement | 4 | 10.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Install traveling brush | 7 | 10.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Downstream outmigration route | 5 | 10.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup and testing | 1 | 10.00 | 0.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 2.7000e-004 | 0.0000 | 2.7000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.5500e-003 | 0.0146 | 0.0141 | 3.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 5.8000e-004 | 5.8000e-004 | 0.0000 | 2.7608 | 2.7608 | 4.7000e-004 | 0.0000 | 2.7725 |
| **Total** | **1.5500e-003** | **0.0146** | **0.0141** | **3.0000e-005** | **2.7000e-004** | **6.0000e-004** | **8.7000e-004** | **3.0000e-005** | **5.8000e-004** | **6.1000e-004** | **0.0000** | **2.7608** | **2.7608** | **4.7000e-004** | **0.0000** | **2.7725** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 2.0000e-004 | 0.0000 | 2.0000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.1418 | 0.1418 | 0.0000 | 0.0000 | 0.1419 |
| **Total** | **8.0000e-005** | **2.4000e-004** | **5.7000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **2.2000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.2148** | **0.2148** | **0.0000** | **0.0000** | **0.2150** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.2000e-004 | 0.0000 | 1.2000e-004 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.5500e-003 | 0.0146 | 0.0141 | 3.0000e-005 | | 6.0000e-004 | 6.0000e-004 | | 5.8000e-004 | 5.8000e-004 | 0.0000 | 2.7608 | 2.7608 | 4.7000e-004 | 0.0000 | 2.7725 |
| **Total** | **1.5500e-003** | **0.0146** | **0.0141** | **3.0000e-005** | **1.2000e-004** | **6.0000e-004** | **7.2000e-004** | **1.0000e-005** | **5.8000e-004** | **5.9000e-004** | **0.0000** | **2.7608** | **2.7608** | **4.7000e-004** | **0.0000** | **2.7725** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 2.0000e-004 | 0.0000 | 2.0000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.1418 | 0.1418 | 0.0000 | 0.0000 | 0.1419 |
| **Total** | **8.0000e-005** | **2.4000e-004** | **5.7000e-004** | **0.0000** | **2.2000e-004** | **0.0000** | **2.2000e-004** | **5.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.2148** | **0.2148** | **0.0000** | **0.0000** | **0.2150** |

## 3.3 Fish screen replacement - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.7400e-003 | 0.0148 | 0.0188 | 4.0000e-005 | | 6.3000e-004 | 6.3000e-004 | | 6.2000e-004 | 6.2000e-004 | 0.0000 | 3.0657 | 3.0657 | 3.6000e-004 | 0.0000 | 3.0746 |
| **Total** | **1.7400e-003** | **0.0148** | **0.0188** | **4.0000e-005** | | **6.3000e-004** | **6.3000e-004** | | **6.2000e-004** | **6.2000e-004** | **0.0000** | **3.0657** | **3.0657** | **3.6000e-004** | **0.0000** | **3.0746** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 3.7000e-004 | 0.0000 | 3.7000e-004 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | 0.1418 | 0.1418 | 0.0000 | 0.0000 | 0.1419 |
| **Total** | **9.0000e-005** | **6.7000e-004** | **6.8000e-004** | **0.0000** | **4.6000e-004** | **0.0000** | **4.6000e-004** | **1.2000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **0.3384** | **0.3384** | **0.0000** | **0.0000** | **0.3386** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.7400e-003 | 0.0148 | 0.0188 | 4.0000e-005 | | 6.3000e-004 | 6.3000e-004 | | 6.2000e-004 | 6.2000e-004 | 0.0000 | 3.0657 | 3.0657 | 3.6000e-004 | 0.0000 | 3.0746 |
| **Total** | **1.7400e-003** | **0.0148** | **0.0188** | **4.0000e-005** | | **6.3000e-004** | **6.3000e-004** | | **6.2000e-004** | **6.2000e-004** | **0.0000** | **3.0657** | **3.0657** | **3.6000e-004** | **0.0000** | **3.0746** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 3.7000e-004 | 0.0000 | 3.7000e-004 | 9.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | 0.1418 | 0.1418 | 0.0000 | 0.0000 | 0.1419 |
| **Total** | **9.0000e-005** | **6.7000e-004** | **6.8000e-004** | **0.0000** | **4.6000e-004** | **0.0000** | **4.6000e-004** | **1.2000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **0.3384** | **0.3384** | **0.0000** | **0.0000** | **0.3386** |

## 3.4 Install traveling brush - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 2.1400e-003 | 0.0182 | 0.0228 | 4.0000e-005 | | 8.2000e-004 | 8.2000e-004 | | 7.9000e-004 | 7.9000e-004 | 0.0000 | 3.6078 | 3.6078 | 4.4000e-004 | 0.0000 | 3.6187 |
| **Total** | **2.1400e-003** | **0.0182** | **0.0228** | **4.0000e-005** | | **8.2000e-004** | **8.2000e-004** | | **7.9000e-004** | **7.9000e-004** | **0.0000** | **3.6078** | **3.6078** | **4.4000e-004** | **0.0000** | **3.6187** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 2.0000e-004 | 0.0000 | 2.0000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.1418 | 0.1418 | 0.0000 | 0.0000 | 0.1419 |
| **Total** | **8.0000e-005** | **4.8000e-004** | **6.2000e-004** | **0.0000** | **2.3000e-004** | **0.0000** | **2.3000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.2653** | **0.2653** | **0.0000** | **0.0000** | **0.2655** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 2.1400e-003 | 0.0182 | 0.0228 | 4.0000e-005 | | 8.2000e-004 | 8.2000e-004 | | 7.9000e-004 | 7.9000e-004 | 0.0000 | 3.6078 | 3.6078 | 4.4000e-004 | 0.0000 | 3.6187 |
| **Total** | **2.1400e-003** | **0.0182** | **0.0228** | **4.0000e-005** | | **8.2000e-004** | **8.2000e-004** | | **7.9000e-004** | **7.9000e-004** | **0.0000** | **3.6078** | **3.6078** | **4.4000e-004** | **0.0000** | **3.6187** |

### Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.0000e-005 | 4.3000e-004 | 1.1000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1235 | 0.1235 | 0.0000 | 0.0000 | 0.1236 |
| Worker | 7.0000e-005 | 5.0000e-005 | 5.1000e-004 | 0.0000 | 2.0000e-004 | 0.0000 | 2.0000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.1418 | 0.1418 | 0.0000 | 0.0000 | 0.1419 |
| **Total** | **8.0000e-005** | **4.8000e-004** | **6.2000e-004** | **0.0000** | **2.3000e-004** | **0.0000** | **2.3000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.2653** | **0.2653** | **0.0000** | **0.0000** | **0.2655** |

## 3.5 Downstream outmigration route - 2027

### Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.5500e-003 | 0.0493 | 0.0590 | 1.1000e-004 | | 2.2100e-003 | 2.2100e-003 | | 2.1000e-003 | 2.1000e-003 | 0.0000 | 9.7772 | 9.7772 | 1.8900e-003 | 0.0000 | 9.8244 |
| **Total** | **5.5500e-003** | **0.0493** | **0.0590** | **1.1000e-004** | | **2.2100e-003** | **2.2100e-003** | | **2.1000e-003** | **2.1000e-003** | **0.0000** | **9.7772** | **9.7772** | **1.8900e-003** | **0.0000** | **9.8244** |

### Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |
| Vendor | 2.0000e-005 | 8.7000e-004 | 2.2000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2471 | 0.2471 | 1.0000e-005 | 0.0000 | 0.2473 |
| Worker | 1.4000e-004 | 1.0000e-004 | 1.0100e-003 | 0.0000 | 4.0000e-004 | 0.0000 | 4.0000e-004 | 1.1000e-004 | 0.0000 | 1.1000e-004 | 0.0000 | 0.2836 | 0.2836 | 1.0000e-005 | 0.0000 | 0.2838 |
| **Total** | **1.7000e-004** | **1.1600e-003** | **1.2900e-003** | **0.0000** | **4.9000e-004** | **0.0000** | **4.9000e-004** | **1.3000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **0.6037** | **0.6037** | **2.0000e-005** | **0.0000** | **0.6042** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 5.5500e-003 | 0.0493 | 0.0590 | 1.1000e-004 | | 2.2100e-003 | 2.2100e-003 | | 2.1000e-003 | 2.1000e-003 | 0.0000 | 9.7772 | 9.7772 | 1.8900e-003 | 0.0000 | 9.8244 |
| **Total** | **5.5500e-003** | **0.0493** | **0.0590** | **1.1000e-004** | | **2.2100e-003** | **2.2100e-003** | | **2.1000e-003** | **2.1000e-003** | **0.0000** | **9.7772** | **9.7772** | **1.8900e-003** | **0.0000** | **9.8244** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |
| Vendor | 2.0000e-005 | 8.7000e-004 | 2.2000e-004 | 0.0000 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.2471 | 0.2471 | 1.0000e-005 | 0.0000 | 0.2473 |
| Worker | 1.4000e-004 | 1.0000e-004 | 1.0100e-003 | 0.0000 | 4.0000e-004 | 0.0000 | 4.0000e-004 | 1.1000e-004 | 0.0000 | 1.1000e-004 | 0.0000 | 0.2836 | 0.2836 | 1.0000e-005 | 0.0000 | 0.2838 |
| **Total** | **1.7000e-004** | **1.1600e-003** | **1.2900e-003** | **0.0000** | **4.9000e-004** | **0.0000** | **4.9000e-004** | **1.3000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **0.6037** | **0.6037** | **2.0000e-005** | **0.0000** | **0.6042** |

## 3.6 Site cleanup and testing - 2027

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.7000e-004 | 4.7500e-003 | 2.6000e-003 | 1.0000e-005 | | 2.0000e-004 | 2.0000e-004 | | 1.9000e-004 | 1.9000e-004 | 0.0000 | 0.7604 | 0.7604 | 2.5000e-004 | 0.0000 | 0.7666 |
| **Total** | **4.7000e-004** | **4.7500e-003** | **2.6000e-003** | **1.0000e-005** | | **2.0000e-004** | **2.0000e-004** | | **1.9000e-004** | **1.9000e-004** | **0.0000** | **0.7604** | **0.7604** | **2.5000e-004** | **0.0000** | **0.7666** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.0000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0851 | 0.0851 | 0.0000 | 0.0000 | 0.0851 |
| **Total** | **5.0000e-005** | **2.2000e-004** | **3.6000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **1.4000e-004** | **3.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1581** | **0.1581** | **0.0000** | **0.0000** | **0.1582** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | |
| Off-Road | 4.7000e-004 | 4.7500e-003 | 2.6000e-003 | 1.0000e-005 | | 2.0000e-004 | 2.0000e-004 | | 1.9000e-004 | 1.9000e-004 | 0.0000 | 0.7604 | 0.7604 | 2.5000e-004 | 0.0000 | 0.7666 |
| **Total** | **4.7000e-004** | **4.7500e-003** | **2.6000e-003** | **1.0000e-005** | | **2.0000e-004** | **2.0000e-004** | | **1.9000e-004** | **1.9000e-004** | **0.0000** | **0.7604** | **0.7604** | **2.5000e-004** | **0.0000** | **0.7666** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 1.9000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0730 | 0.0730 | 0.0000 | 0.0000 | 0.0731 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 4.0000e-005 | 3.0000e-005 | 3.0000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0851 | 0.0851 | 0.0000 | 0.0000 | 0.0851 |
| **Total** | **5.0000e-005** | **2.2000e-004** | **3.6000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **1.4000e-004** | **3.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1581** | **0.1581** | **0.0000** | **0.0000** | **0.1582** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Unmitigated | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **7.8100e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **7.8100e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | tons | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Felton Diversion
**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Felton diversion improvement construction

Land Use - Surrogate land use for Felton diversion facility improvements

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - Assumed 0.5 acre would be disturbed and 64 CY material exported

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 1000 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 3000 | 0 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 3.00 |
| tblConstructionPhase | PhaseEndDate | 6/28/2027 | 7/3/2027 |
| tblConstructionPhase | PhaseEndDate | 11/15/2027 | 7/9/2027 |
| tblConstructionPhase | PhaseEndDate | 4/3/2028 | 7/17/2027 |
| tblConstructionPhase | PhaseEndDate | 8/21/2028 | 7/31/2027 |
| tblConstructionPhase | PhaseEndDate | 5/28/2029 | 8/4/2027 |
| tblConstructionPhase | PhaseStartDate | 6/29/2027 | 7/5/2027 |
| tblConstructionPhase | PhaseStartDate | 11/16/2027 | 7/11/2027 |
| tblConstructionPhase | PhaseStartDate | 4/4/2028 | 7/18/2027 |
| tblConstructionPhase | PhaseStartDate | 1/9/2029 | 8/1/2027 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 64.00 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.29 | 0.29 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Trenchers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Plate Compactors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pressure Washers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 8.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 8.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 1.1438 | 10.0950 | 12.0636 | 0.0239 | 0.1963 | 0.4427 | 0.5418 | 0.0488 | 0.4205 | 0.4471 | 0.0000 | 2,292.2410 | 2,292.2410 | 0.4206 | 0.0000 | 2,302.7553 |
| **Maximum** | **1.1438** | **10.0950** | **12.0636** | **0.0239** | **0.1963** | **0.4427** | **0.5418** | **0.0488** | **0.4205** | **0.4471** | **0.0000** | **2,292.2410** | **2,292.2410** | **0.4206** | **0.0000** | **2,302.7553** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 1.1438 | 10.0950 | 12.0636 | 0.0239 | 0.1889 | 0.4427 | 0.5418 | 0.0488 | 0.4205 | 0.4471 | 0.0000 | 2,292.2410 | 2,292.2410 | 0.4206 | 0.0000 | 2,302.7553 |
| **Maximum** | **1.1438** | **10.0950** | **12.0636** | **0.0239** | **0.1889** | **0.4427** | **0.5418** | **0.0488** | **0.4205** | **0.4471** | **0.0000** | **2,292.2410** | **2,292.2410** | **0.4206** | **0.0000** | **2,302.7553** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **3.75** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 6/27/2027 | 7/3/2027 | 5 | 5 | |
| 2 | Fish screen replacement | Building Construction | 7/5/2027 | 7/9/2027 | 5 | 5 | |
| 3 | Install traveling brush | Building Construction | 7/11/2027 | 7/17/2027 | 5 | 5 | |
| 4 | Downstream outmigration route | Building Construction | 7/18/2027 | 7/31/2027 | 5 | 10 | |
| 5 | Site cleanup and testing | Building Construction | 8/1/2027 | 8/4/2027 | 5 | 3 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Install traveling brush | Air Compressors | 1 | 8.00 | 78 | 0.48 |

| | | | | | |
|---|---|---|---|---|---|
| Site Preparation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Install traveling brush | Concrete/Industrial Saws | 1 | 2.00 | 81 | 0.73 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Fish screen replacement | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Install traveling brush | Trenchers | 1 | 2.00 | 78 | 0.50 |
| Fish screen replacement | Cranes | 1 | 4.00 | 231 | 0.29 |
| Fish screen replacement | Forklifts | 1 | 4.00 | 89 | 0.20 |
| Fish screen replacement | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Install traveling brush | Plate Compactors | 1 | 2.00 | 8 | 0.43 |
| Fish screen replacement | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Install traveling brush | Cranes | 1 | 4.00 | 231 | 0.29 |
| Downstream outmigration route | Other Construction Equipment | 1 | 8.00 | 172 | 0.42 |
| Install traveling brush | Forklifts | 1 | 4.00 | 89 | 0.20 |
| Install traveling brush | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Install traveling brush | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Downstream outmigration route | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Downstream outmigration route | Cement and Mortar Mixers | 1 | 1.00 | 9 | 0.56 |
| Downstream outmigration route | Cranes | 1 | 8.00 | 231 | 0.29 |
| Downstream outmigration route | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Downstream outmigration route | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Downstream outmigration route | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Cranes | 1 | 8.00 | 231 | 0.29 |
| Site Preparation | Pressure Washers | 1 | 8.00 | 13 | 0.30 |
| Site cleanup and testing | Cranes | 1 | 8.00 | 231 | 0.29 |
| Site cleanup and testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Site cleanup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 3 | 10.00 | 0.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Fish screen replacement | 4 | 10.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Install traveling brush | 7 | 10.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Downstream outmigration route | 5 | 10.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup and testing | 1 | 10.00 | 0.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.1072 | 0.0000 | 0.1072 | 0.0116 | 0.0000 | 0.0116 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.6189 | 5.8363 | 5.6247 | 0.0129 | | 0.2414 | 0.2414 | | 0.2307 | 0.2307 | | 1,217.2895 | 1,217.2895 | 0.2063 | | 1,222.4468 |
| **Total** | **0.6189** | **5.8363** | **5.6247** | **0.0129** | **0.1072** | **0.2414** | **0.3486** | **0.0116** | **0.2307** | **0.2423** | | **1,217.2895** | **1,217.2895** | **0.2063** | | **1,222.4468** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.9900e-003 | 0.0743 | 0.0232 | 3.0000e-004 | 6.9300e-003 | 1.9000e-004 | 7.1200e-003 | 1.8900e-003 | 1.8000e-004 | 2.0800e-003 | | 32.3860 | 32.3860 | 1.2900e-003 | | 32.4184 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0304** | **0.0918** | **0.2342** | **9.6000e-004** | **0.0891** | **7.3000e-004** | **0.0898** | **0.0237** | **6.7000e-004** | **0.0244** | | **97.9575** | **97.9575** | **3.0000e-003** | | **98.0326** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0482 | 0.0000 | 0.0482 | 5.2300e-003 | 0.0000 | 5.2300e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.6189 | 5.8363 | 5.6247 | 0.0129 | | 0.2414 | 0.2414 | | 0.2307 | 0.2307 | 0.0000 | 1,217.2895 | 1,217.2895 | 0.2063 | | 1,222.4468 |
| **Total** | **0.6189** | **5.8363** | **5.6247** | **0.0129** | **0.0482** | **0.2414** | **0.2896** | **5.2300e-003** | **0.2307** | **0.2359** | **0.0000** | **1,217.2895** | **1,217.2895** | **0.2063** | | **1,222.4468** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.9900e-003 | 0.0743 | 0.0232 | 3.0000e-004 | 6.9300e-003 | 1.9000e-004 | 7.1200e-003 | 1.8900e-003 | 1.8000e-004 | 2.0800e-003 | | 32.3860 | 32.3860 | 1.2900e-003 | | 32.4184 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0304** | **0.0918** | **0.2342** | **9.6000e-004** | **0.0891** | **7.3000e-004** | **0.0898** | **0.0237** | **6.7000e-004** | **0.0244** | | **97.9575** | **97.9575** | **3.0000e-003** | | **98.0326** |

## 3.3 Fish screen replacement - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6941 | 5.9160 | 7.5068 | 0.0142 | | 0.2533 | 0.2533 | | 0.2462 | 0.2462 | | 1,351.7272 | 1,351.7272 | 0.1578 | | 1,355.6721 |
| **Total** | **0.6941** | **5.9160** | **7.5068** | **0.0142** | | **0.2533** | **0.2533** | | **0.2462** | **0.2462** | | **1,351.7272** | **1,351.7272** | **0.1578** | | **1,355.6721** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.9900e-003 | 0.0743 | 0.0232 | 3.0000e-004 | 0.0122 | 1.9000e-004 | 0.0124 | 3.1900e-003 | 1.8000e-004 | 3.3800e-003 | | 32.3860 | 32.3860 | 1.2900e-003 | | 32.4184 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0231 | 2.8000e-004 | 0.0234 | 6.2500e-003 | 2.7000e-004 | 6.5200e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.1535 | 5.4000e-004 | 0.1541 | 0.0393 | 4.9000e-004 | 0.0398 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0346** | **0.2642** | **0.2761** | **1.4800e-003** | **0.1889** | **1.0100e-003** | **0.1899** | **0.0488** | **9.4000e-004** | **0.0497** | | **152.9261** | **152.9261** | **4.8400e-003** | | **153.0473** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6941 | 5.9160 | 7.5068 | 0.0142 | | 0.2533 | 0.2533 | | 0.2462 | 0.2462 | 0.0000 | 1,351.7272 | 1,351.7272 | 0.1578 | | 1,355.6721 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.6941** | **5.9160** | **7.5068** | **0.0142** | | **0.2533** | **0.2533** | | **0.2462** | **0.2462** | **0.0000** | **1,351.7272** | **1,351.7272** | **0.1578** | | **1,355.6721** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.9900e-003 | 0.0743 | 0.0232 | 3.0000e-004 | 0.0122 | 1.9000e-004 | 0.0124 | 3.1900e-003 | 1.8000e-004 | 3.3800e-003 | | 32.3860 | 32.3860 | 1.2900e-003 | | 32.4184 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0231 | 2.8000e-004 | 0.0234 | 6.2500e-003 | 2.7000e-004 | 6.5200e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.1535 | 5.4000e-004 | 0.1541 | 0.0393 | 4.9000e-004 | 0.0398 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0346** | **0.2642** | **0.2761** | **1.4800e-003** | **0.1889** | **1.0100e-003** | **0.1899** | **0.0488** | **9.4000e-004** | **0.0497** | | **152.9261** | **152.9261** | **4.8400e-003** | | **153.0473** |

# 3.4 Install traveling brush - 2027

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8568 | 7.2857 | 9.1160 | 0.0167 | | 0.3282 | 0.3282 | | 0.3171 | 0.3171 | | 1,590.7589 | 1,590.7589 | 0.1918 | | 1,595.5542 |
| **Total** | **0.8568** | **7.2857** | **9.1160** | **0.0167** | | **0.3282** | **0.3282** | | **0.3171** | **0.3171** | | **1,590.7589** | **1,590.7589** | **0.1918** | | **1,595.5542** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0326** | **0.1899** | **0.2529** | **1.1800e-003** | **0.0956** | **8.2000e-004** | **0.0965** | **0.0257** | **7.6000e-004** | **0.0264** | | **120.5401** | **120.5401** | **3.5500e-003** | | **120.6289** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8568 | 7.2857 | 9.1160 | 0.0167 | | 0.3282 | 0.3282 | | 0.3171 | 0.3171 | 0.0000 | 1,590.7589 | 1,590.7589 | 0.1918 | | 1,595.5542 |
| **Total** | **0.8568** | **7.2857** | **9.1160** | **0.0167** | | **0.3282** | **0.3282** | | **0.3171** | **0.3171** | **0.0000** | **1,590.7589** | **1,590.7589** | **0.1918** | | **1,595.5542** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0326** | **0.1899** | **0.2529** | **1.1800e-003** | **0.0956** | **8.2000e-004** | **0.0965** | **0.0257** | **7.6000e-004** | **0.0264** | | **120.5401** | **120.5401** | **3.5500e-003** | | **120.6289** |

## 3.5 Downstream outmigration route - 2027

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1102 | 9.8680 | 11.7991 | 0.0225 | | 0.4418 | 0.4418 | | 0.4197 | 0.4197 | | 2,155.5079 | 2,155.5079 | 0.4164 | | 2,165.9172 |
| **Total** | **1.1102** | **9.8680** | **11.7991** | **0.0225** | | **0.4418** | **0.4418** | | **0.4197** | **0.4197** | | **2,155.5079** | **2,155.5079** | **0.4164** | | **2,165.9172** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 9.9000e-004 | 0.0371 | 0.0116 | 1.5000e-004 | 3.4700e-003 | 1.0000e-004 | 3.5600e-003 | 9.5000e-004 | 9.0000e-005 | 1.0400e-003 | | 16.1930 | 16.1930 | 6.5000e-004 | | 16.2092 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0336** | **0.2270** | **0.2645** | **1.3300e-003** | **0.0991** | **9.2000e-004** | **0.1000** | **0.0266** | **8.5000e-004** | **0.0275** | | **136.7331** | **136.7331** | **4.2000e-003** | | **136.8381** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1102 | 9.8680 | 11.7991 | 0.0225 | | 0.4418 | 0.4418 | | 0.4197 | 0.4197 | 0.0000 | 2,155.5079 | 2,155.5079 | 0.4164 | | 2,165.9172 |
| **Total** | **1.1102** | **9.8680** | **11.7991** | **0.0225** | | **0.4418** | **0.4418** | | **0.4197** | **0.4197** | **0.0000** | **2,155.5079** | **2,155.5079** | **0.4164** | | **2,165.9172** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 9.9000e-004 | 0.0371 | 0.0116 | 1.5000e-004 | 3.4700e-003 | 1.0000e-004 | 3.5600e-003 | 9.5000e-004 | 9.0000e-005 | 1.0400e-003 | | 16.1930 | 16.1930 | 6.5000e-004 | | 16.2092 |
| Vendor | 4.2000e-003 | 0.1724 | 0.0419 | 5.2000e-004 | 0.0135 | 2.8000e-004 | 0.0138 | 3.8800e-003 | 2.7000e-004 | 4.1500e-003 | | 54.9686 | 54.9686 | 1.8400e-003 | | 55.0147 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0336** | **0.2270** | **0.2645** | **1.3300e-003** | **0.0991** | **9.2000e-004** | **0.1000** | **0.0266** | **8.5000e-004** | **0.0275** | | **136.7331** | **136.7331** | **4.2000e-003** | | **136.8381** |

# 3.6 Site cleanup and testing - 2027

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.3128 | 3.1679 | 1.7365 | 5.7700e-003 | | 0.1347 | 0.1347 | | 0.1239 | 0.1239 | | 558.8262 | 558.8262 | 0.1807 | | 563.3446 |
| **Total** | **0.3128** | **3.1679** | **1.7365** | **5.7700e-003** | | **0.1347** | **0.1347** | | **0.1239** | **0.1239** | | **558.8262** | **558.8262** | **0.1807** | | **563.3446** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.3100e-003 | 0.1238 | 0.0387 | 5.0000e-004 | 0.0116 | 3.2000e-004 | 0.0119 | 3.1600e-003 | 3.1000e-004 | 3.4700e-003 | | 53.9767 | 53.9767 | 2.1600e-003 | | 54.0307 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0318** | **0.1413** | **0.2497** | **1.1600e-003** | **0.0937** | **8.6000e-004** | **0.0946** | **0.0250** | **8.0000e-004** | **0.0258** | | **119.5482** | **119.5482** | **3.8700e-003** | | **119.6449** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3128 | 3.1679 | 1.7365 | 5.7700e-003 | | 0.1347 | 0.1347 | | 0.1239 | 0.1239 | 0.0000 | 558.8262 | 558.8262 | 0.1807 | | 563.3446 |
| **Total** | **0.3128** | **3.1679** | **1.7365** | **5.7700e-003** | | **0.1347** | **0.1347** | | **0.1239** | **0.1239** | **0.0000** | **558.8262** | **558.8262** | **0.1807** | | **563.3446** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.3100e-003 | 0.1238 | 0.0387 | 5.0000e-004 | 0.0116 | 3.2000e-004 | 0.0119 | 3.1600e-003 | 3.1000e-004 | 3.4700e-003 | | 53.9767 | 53.9767 | 2.1600e-003 | | 54.0307 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0284 | 0.0176 | 0.2110 | 6.6000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 65.5715 | 65.5715 | 1.7100e-003 | | 65.6142 |
| **Total** | **0.0318** | **0.1413** | **0.2497** | **1.1600e-003** | **0.0937** | **8.6000e-004** | **0.0946** | **0.0250** | **8.0000e-004** | **0.0258** | | **119.5482** | **119.5482** | **3.8700e-003** | | **119.6449** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |

| | | | | | |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Felton Diversion
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2028 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Felton diversion improvement construction

Land Use - Surrogate land use for Felton diversion facility improvements

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - Assumed 0.5 acre would be disturbed and 64 CY material exported

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 1000 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 3000 | 0 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 5.00 |
| tblConstructionPhase | NumDays | 100.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 3.00 |
| tblConstructionPhase | PhaseEndDate | 6/28/2027 | 7/3/2027 |
| tblConstructionPhase | PhaseEndDate | 11/15/2027 | 7/9/2027 |
| tblConstructionPhase | PhaseEndDate | 4/3/2028 | 7/17/2027 |
| tblConstructionPhase | PhaseEndDate | 8/21/2028 | 7/31/2027 |
| tblConstructionPhase | PhaseEndDate | 5/28/2029 | 8/4/2027 |
| tblConstructionPhase | PhaseStartDate | 6/29/2027 | 7/5/2027 |
| tblConstructionPhase | PhaseStartDate | 11/16/2027 | 7/11/2027 |
| tblConstructionPhase | PhaseStartDate | 4/4/2028 | 7/18/2027 |
| tblConstructionPhase | PhaseStartDate | 1/9/2029 | 8/1/2027 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 64.00 |
| tblOffRoadEquipment | LoadFactor | 0.50 | 0.50 |
| tblOffRoadEquipment | LoadFactor | 0.42 | 0.42 |
| tblOffRoadEquipment | LoadFactor | 0.29 | 0.29 |
| tblOffRoadEquipment | OffRoadEquipmentType | | Air Compressors |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentType | | Concrete/Industrial Saws |
| tblOffRoadEquipment | OffRoadEquipmentType | | Trenchers |
| tblOffRoadEquipment | OffRoadEquipmentType | | Plate Compactors |
| tblOffRoadEquipment | OffRoadEquipmentType | | Other Construction Equipment |
| tblOffRoadEquipment | OffRoadEquipmentType | | Cranes |
| tblOffRoadEquipment | OffRoadEquipmentType | | Pressure Washers |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 4.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 8.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | WorkerTripNumber | 8.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 10.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 1.1480 | 10.1003 | 12.0688 | 0.0238 | 0.1963 | 0.4427 | 0.5418 | 0.0488 | 0.4206 | 0.4472 | 0.0000 | 2,287.7275 | 2,287.7275 | 0.4206 | 0.0000 | 2,298.2433 |
| **Maximum** | **1.1480** | **10.1003** | **12.0688** | **0.0238** | **0.1963** | **0.4427** | **0.5418** | **0.0488** | **0.4206** | **0.4472** | **0.0000** | **2,287.7275** | **2,287.7275** | **0.4206** | **0.0000** | **2,298.2433** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2027 | 1.1480 | 10.1003 | 12.0688 | 0.0238 | 0.1889 | 0.4427 | 0.5418 | 0.0488 | 0.4206 | 0.4472 | 0.0000 | 2,287.7275 | 2,287.7275 | 0.4206 | 0.0000 | 2,298.2433 |
| **Maximum** | **1.1480** | **10.1003** | **12.0688** | **0.0238** | **0.1889** | **0.4427** | **0.5418** | **0.0488** | **0.4206** | **0.4472** | **0.0000** | **2,287.7275** | **2,287.7275** | **0.4206** | **0.0000** | **2,298.2433** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **3.75** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 6/27/2027 | 7/3/2027 | 5 | 5 | |
| 2 | Fish screen replacement | Building Construction | 7/5/2027 | 7/9/2027 | 5 | 5 | |
| 3 | Install traveling brush | Building Construction | 7/11/2027 | 7/17/2027 | 5 | 5 | |
| 4 | Downstream outmigration route | Building Construction | 7/18/2027 | 7/31/2027 | 5 | 10 | |
| 5 | Site cleanup and testing | Building Construction | 8/1/2027 | 8/4/2027 | 5 | 3 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Install traveling brush | Air Compressors | 1 | 8.00 | 78 | 0.48 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Site Preparation | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Site Preparation | Graders | | 0 | 0.00 | 187 | 0.41 |
| Install traveling brush | Concrete/Industrial Saws | | 1 | 2.00 | 81 | 0.73 |
| Site Preparation | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Fish screen replacement | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Install traveling brush | Trenchers | | 1 | 2.00 | 78 | 0.50 |
| Fish screen replacement | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Fish screen replacement | Forklifts | | 1 | 4.00 | 89 | 0.20 |
| Fish screen replacement | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Install traveling brush | Plate Compactors | | 1 | 2.00 | 8 | 0.43 |
| Fish screen replacement | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Install traveling brush | Cranes | | 1 | 4.00 | 231 | 0.29 |
| Downstream outmigration route | Other Construction Equipment | | 1 | 8.00 | 172 | 0.42 |
| Install traveling brush | Forklifts | | 1 | 4.00 | 89 | 0.20 |
| Install traveling brush | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Install traveling brush | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Downstream outmigration route | Air Compressors | | 1 | 8.00 | 78 | 0.48 |
| Downstream outmigration route | Cement and Mortar Mixers | | 1 | 1.00 | 9 | 0.56 |
| Downstream outmigration route | Cranes | | 1 | 8.00 | 231 | 0.29 |
| Downstream outmigration route | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Downstream outmigration route | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Downstream outmigration route | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |
| Site Preparation | Cranes | | 1 | 8.00 | 231 | 0.29 |
| Site Preparation | Pressure Washers | | 1 | 8.00 | 13 | 0.30 |
| Site cleanup and testing | Cranes | | 1 | 8.00 | 231 | 0.29 |
| Site cleanup and testing | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Site cleanup and testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 3 | 10.00 | 0.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Fish screen replacement | 4 | 10.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Install traveling brush | 7 | 10.00 | 2.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Downstream outmigration route | 5 | 10.00 | 2.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup and testing | 1 | 10.00 | 0.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.1072 | 0.0000 | 0.1072 | 0.0116 | 0.0000 | 0.0116 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.6189 | 5.8363 | 5.6247 | 0.0129 | | 0.2414 | 0.2414 | | 0.2307 | 0.2307 | | 1,217.2895 | 1,217.2895 | 0.2063 | | 1,222.4468 |
| **Total** | **0.6189** | **5.8363** | **5.6247** | **0.0129** | **0.1072** | **0.2414** | **0.3486** | **0.0116** | **0.2307** | **0.2423** | | **1,217.2895** | **1,217.2895** | **0.2063** | | **1,222.4468** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.0400e-003 | 0.0753 | 0.0243 | 3.0000e-004 | 6.9300e-003 | 2.0000e-004 | 7.1300e-003 | 1.8900e-003 | 1.9000e-004 | 2.0800e-003 | | 31.9323 | 31.9323 | 1.3300e-003 | | 31.9657 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0344** | **0.0971** | **0.2347** | **9.3000e-004** | **0.0891** | **7.4000e-004** | **0.0898** | **0.0237** | **6.8000e-004** | **0.0244** | | **94.4071** | **94.4071** | **2.9600e-003** | | **94.4812** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0482 | 0.0000 | 0.0482 | 5.2300e-003 | 0.0000 | 5.2300e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.6189 | 5.8363 | 5.6247 | 0.0129 | | 0.2414 | 0.2414 | | 0.2307 | 0.2307 | 0.0000 | 1,217.2895 | 1,217.2895 | 0.2063 | | 1,222.4468 |
| **Total** | **0.6189** | **5.8363** | **5.6247** | **0.0129** | **0.0482** | **0.2414** | **0.2896** | **5.2300e-003** | **0.2307** | **0.2359** | **0.0000** | **1,217.2895** | **1,217.2895** | **0.2063** | | **1,222.4468** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.0400e-003 | 0.0753 | 0.0243 | 3.0000e-004 | 6.9300e-003 | 2.0000e-004 | 7.1300e-003 | 1.8900e-003 | 1.9000e-004 | 2.0800e-003 | | 31.9323 | 31.9323 | 1.3300e-003 | | 31.9657 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0344** | **0.0971** | **0.2347** | **9.3000e-004** | **0.0891** | **7.4000e-004** | **0.0898** | **0.0237** | **6.8000e-004** | **0.0244** | | **94.4071** | **94.4071** | **2.9600e-003** | | **94.4812** |

# 3.3 Fish screen replacement - 2027

## Unmitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6941 | 5.9160 | 7.5068 | 0.0142 | | 0.2533 | 0.2533 | | 0.2462 | 0.2462 | | 1,351.7272 | 1,351.7272 | 0.1578 | | 1,355.6721 |
| **Total** | **0.6941** | **5.9160** | **7.5068** | **0.0142** | | **0.2533** | **0.2533** | | **0.2462** | **0.2462** | | **1,351.7272** | **1,351.7272** | **0.1578** | | **1,355.6721** |

## Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.0400e-003 | 0.0753 | 0.0243 | 3.0000e-004 | 0.0122 | 2.0000e-004 | 0.0124 | 3.1900e-003 | 1.9000e-004 | 3.3800e-003 | | 31.9323 | 31.9323 | 1.3300e-003 | | 31.9657 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0231 | 3.0000e-004 | 0.0234 | 6.2500e-003 | 2.8000e-004 | 6.5300e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.1535 | 5.4000e-004 | 0.1541 | 0.0393 | 4.9000e-004 | 0.0398 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0388** | **0.2700** | **0.2819** | **1.4400e-003** | **0.1889** | **1.0400e-003** | **0.1899** | **0.0488** | **9.6000e-004** | **0.0497** | | **148.1858** | **148.1858** | **4.9200e-003** | | **148.3090** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.6941 | 5.9160 | 7.5068 | 0.0142 | | 0.2533 | 0.2533 | | 0.2462 | 0.2462 | 0.0000 | 1,351.7272 | 1,351.7272 | 0.1578 | | 1,355.6721 |

| Total | 0.6941 | 5.9160 | 7.5068 | 0.0142 | | 0.2533 | 0.2533 | | 0.2462 | 0.2462 | 0.0000 | 1,351.7272 | 1,351.7272 | 0.1578 | | 1,355.6721 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.0400e-003 | 0.0753 | 0.0243 | 3.0000e-004 | 0.0122 | 2.0000e-004 | 0.0124 | 3.1900e-003 | 1.9000e-004 | 3.3800e-003 | | 31.9323 | 31.9323 | 1.3300e-003 | | 31.9657 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0231 | 3.0000e-004 | 0.0234 | 6.2500e-003 | 2.8000e-004 | 6.5300e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.1535 | 5.4000e-004 | 0.1541 | 0.0393 | 4.9000e-004 | 0.0398 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0388** | **0.2700** | **0.2819** | **1.4400e-003** | **0.1889** | **1.0400e-003** | **0.1899** | **0.0488** | **9.6000e-004** | **0.0497** | | **148.1858** | **148.1858** | **4.9200e-003** | | **148.3090** |

## 3.4 Install traveling brush - 2027

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8568 | 7.2857 | 9.1160 | 0.0167 | | 0.3282 | 0.3282 | | 0.3171 | 0.3171 | | 1,590.7589 | 1,590.7589 | 0.1918 | | 1,595.5542 |
| **Total** | **0.8568** | **7.2857** | **9.1160** | **0.0167** | | **0.3282** | **0.3282** | | **0.3171** | **0.3171** | | **1,590.7589** | **1,590.7589** | **0.1918** | | **1,595.5542** |

### Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0368** | **0.1947** | **0.2576** | **1.1400e-003** | **0.0956** | **8.4000e-004** | **0.0965** | **0.0257** | **7.7000e-004** | **0.0264** | | **116.2534** | **116.2534** | **3.5900e-003** | | **116.3433** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.8568 | 7.2857 | 9.1160 | 0.0167 | | 0.3282 | 0.3282 | | 0.3171 | 0.3171 | 0.0000 | 1,590.7589 | 1,590.7589 | 0.1918 | | 1,595.5542 |
| **Total** | **0.8568** | **7.2857** | **9.1160** | **0.0167** | | **0.3282** | **0.3282** | | **0.3171** | **0.3171** | **0.0000** | **1,590.7589** | **1,590.7589** | **0.1918** | | **1,595.5542** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0368** | **0.1947** | **0.2576** | **1.1400e-003** | **0.0956** | **8.4000e-004** | **0.0965** | **0.0257** | **7.7000e-004** | **0.0264** | | **116.2534** | **116.2534** | **3.5900e-003** | | **116.3433** |

## 3.5 Downstream outmigration route - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1102 | 9.8680 | 11.7991 | 0.0225 | | 0.4418 | 0.4418 | | 0.4197 | 0.4197 | | 2,155.5079 | 2,155.5079 | 0.4164 | | 2,165.9172 |
| **Total** | **1.1102** | **9.8680** | **11.7991** | **0.0225** | | **0.4418** | **0.4418** | | **0.4197** | **0.4197** | | **2,155.5079** | **2,155.5079** | **0.4164** | | **2,165.9172** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.0200e-003 | 0.0377 | 0.0121 | 1.5000e-004 | 3.4700e-003 | 1.0000e-004 | 3.5700e-003 | 9.5000e-004 | 1.0000e-004 | 1.0400e-003 | | 15.9662 | 15.9662 | 6.7000e-004 | | 15.9828 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0378** | **0.2323** | **0.2697** | **1.2900e-003** | **0.0991** | **9.4000e-004** | **0.1000** | **0.0266** | **8.7000e-004** | **0.0275** | | **132.2196** | **132.2196** | **4.2600e-003** | | **132.3261** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.1102 | 9.8680 | 11.7991 | 0.0225 | | 0.4418 | 0.4418 | | 0.4197 | 0.4197 | 0.0000 | 2,155.5079 | 2,155.5079 | 0.4164 | | 2,165.9172 |
| **Total** | **1.1102** | **9.8680** | **11.7991** | **0.0225** | | **0.4418** | **0.4418** | | **0.4197** | **0.4197** | **0.0000** | **2,155.5079** | **2,155.5079** | **0.4164** | | **2,165.9172** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.0200e-003 | 0.0377 | 0.0121 | 1.5000e-004 | 3.4700e-003 | 1.0000e-004 | 3.5700e-003 | 9.5000e-004 | 1.0000e-004 | 1.0400e-003 | | 15.9662 | 15.9662 | 6.7000e-004 | | 15.9828 |
| Vendor | 4.4600e-003 | 0.1728 | 0.0472 | 5.1000e-004 | 0.0135 | 3.0000e-004 | 0.0138 | 3.8800e-003 | 2.8000e-004 | 4.1600e-003 | | 53.7787 | 53.7787 | 1.9600e-003 | | 53.8278 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0378** | **0.2323** | **0.2697** | **1.2900e-003** | **0.0991** | **9.4000e-004** | **0.1000** | **0.0266** | **8.7000e-004** | **0.0275** | | **132.2196** | **132.2196** | **4.2600e-003** | | **132.3261** |

## 3.6 Site cleanup and testing - 2027

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.3128 | 3.1679 | 1.7365 | 5.7700e-003 | | 0.1347 | 0.1347 | | 0.1239 | 0.1239 | | 558.8262 | 558.8262 | 0.1807 | | 563.3446 |
| **Total** | **0.3128** | **3.1679** | **1.7365** | **5.7700e-003** | | **0.1347** | **0.1347** | | **0.1239** | **0.1239** | | **558.8262** | **558.8262** | **0.1807** | | **563.3446** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.4100e-003 | 0.1255 | 0.0405 | 5.0000e-004 | 0.0116 | 3.3000e-004 | 0.0119 | 3.1600e-003 | 3.2000e-004 | 3.4700e-003 | | 53.2206 | 53.2206 | 2.2200e-003 | | 53.2761 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0358** | **0.1473** | **0.2509** | **1.1300e-003** | **0.0937** | **8.7000e-004** | **0.0946** | **0.0250** | **8.1000e-004** | **0.0258** | | **115.6953** | **115.6953** | **3.8500e-003** | | **115.7917** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.3128 | 3.1679 | 1.7365 | 5.7700e-003 | | 0.1347 | 0.1347 | | 0.1239 | 0.1239 | 0.0000 | 558.8262 | 558.8262 | 0.1807 | | 563.3446 |
| **Total** | **0.3128** | **3.1679** | **1.7365** | **5.7700e-003** | | **0.1347** | **0.1347** | | **0.1239** | **0.1239** | **0.0000** | **558.8262** | **558.8262** | **0.1807** | | **563.3446** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 3.4100e-003 | 0.1255 | 0.0405 | 5.0000e-004 | 0.0116 | 3.3000e-004 | 0.0119 | 3.1600e-003 | 3.2000e-004 | 3.4700e-003 | | 53.2206 | 53.2206 | 2.2200e-003 | | 53.2761 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0323 | 0.0218 | 0.2104 | 6.3000e-004 | 0.0822 | 5.4000e-004 | 0.0827 | 0.0218 | 4.9000e-004 | 0.0223 | | 62.4747 | 62.4747 | 1.6300e-003 | | 62.5155 |
| **Total** | **0.0358** | **0.1473** | **0.2509** | **1.1300e-003** | **0.0937** | **8.7000e-004** | **0.0946** | **0.0250** | **8.1000e-004** | **0.0258** | | **115.6953** | **115.6953** | **3.8500e-003** | | **115.7917** |

## 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |

| | | | | | |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.596952 | 0.024911 | 0.205643 | 0.109204 | 0.014768 | 0.004214 | 0.021216 | 0.013069 | 0.001228 | 0.002009 | 0.005071 | 0.000963 | 0.000752 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Tait Diversion
## Santa Cruz County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2029 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Tait diversion improvement construction

Land Use - Surrogate land use for Tait diversion facility improvements

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - Assumed 0.5 acre would be disturbed and 144 CY material exported

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 1000 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 3000 | 0 |
| tblConstructionPhase | NumDays | 100.00 | 45.00 |
| tblConstructionPhase | NumDays | 100.00 | 39.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 27.00 |
| tblConstructionPhase | NumDays | 100.00 | 13.00 |
| tblConstructionPhase | NumDays | 1.00 | 16.00 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 144.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 18.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 3.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2028 | 0.1143 | 0.9852 | 1.4786 | 2.7000e-003 | 8.8700e-003 | 0.0404 | 0.0493 | 2.3300e-003 | 0.0396 | 0.0420 | 0.0000 | 233.4646 | 233.4646 | 0.0236 | 0.0000 | 234.0537 |
| **Maximum** | **0.1143** | **0.9852** | **1.4786** | **2.7000e-003** | **8.8700e-003** | **0.0404** | **0.0493** | **2.3300e-003** | **0.0396** | **0.0420** | **0.0000** | **233.4646** | **233.4646** | **0.0236** | **0.0000** | **234.0537** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2028 | 0.1143 | 0.9852 | 1.4786 | 2.7000e-003 | 8.7200e-003 | 0.0404 | 0.0491 | 2.3100e-003 | 0.0396 | 0.0420 | 0.0000 | 233.4644 | 233.4644 | 0.0236 | 0.0000 | 234.0534 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Maximum** | **0.1143** | **0.9852** | **1.4786** | **2.7000e-003** | **8.7200e-003** | **0.0404** | **0.0491** | **2.3100e-003** | **0.0396** | **0.0420** | **0.0000** | **233.4644** | **233.4644** | **0.0236** | **0.0000** | **234.0534** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **1.69** | **0.00** | **0.30** | **0.86** | **0.00** | **0.05** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| **1** | **5-15-2028** | **8-14-2028** | 0.5248 | 0.5248 |
| **2** | **8-15-2028** | **9-30-2028** | 0.2359 | 0.2359 |
| | | **Highest** | 0.5248 | 0.5248 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **7.8100e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **7.8100e-003** | **0.0000** | **3.0000e-005** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### <u>Construction Phase</u>

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/15/2028 | 6/5/2028 | 5 | 16 | |
| 2 | Intake design upgrades | Building Construction | 6/6/2028 | 8/7/2028 | 5 | 45 | |
| 3 | Hydraulic modifications | Building Construction | 8/8/2028 | 10/1/2028 | 5 | 39 | |
| 4 | Improvements to check dam | Building Construction | 10/1/2028 | 10/20/2028 | 5 | 15 | |
| 5 | Fish passage upgrades | Building Construction | 10/21/2028 | 11/28/2028 | 5 | 27 | |
| 6 | Site cleanup and testing | Building Construction | 11/29/2028 | 12/15/2028 | 5 | 13 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Excavators | 1 | 8.00 | 158 | 0.38 |
| Site Preparation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Pumps | 1 | 24.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Intake design upgrades | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Intake design upgrades | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Intake design upgrades | Cranes | 1 | 8.00 | 231 | 0.29 |
| Intake design upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Intake design upgrades | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Intake design upgrades | Pumps | 1 | 24.00 | 84 | 0.74 |
| Intake design upgrades | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Hydraulic modifications | Cranes | 0 | 0.00 | 231 | 0.29 |
| Hydraulic modifications | Excavators | 1 | 8.00 | 158 | 0.38 |
| Hydraulic modifications | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Hydraulic modifications | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Hydraulic modifications | Pumps | 1 | 24.00 | 84 | 0.74 |
| Hydraulic modifications | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Improvements to check dam | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Improvements to check dam | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Improvements to check dam | Cranes | 0 | 0.00 | 231 | 0.29 |
| Improvements to check dam | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Improvements to check dam | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Improvements to check dam | Other Construction Equipment | 1 | 4.00 | 172 | 0.42 |
| Improvements to check dam | Pumps | 1 | 24.00 | 84 | 0.74 |
| Improvements to check dam | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Fish passage upgrades | Cranes | 0 | 0.00 | 231 | 0.29 |
| Fish passage upgrades | Excavators | 1 | 8.00 | 158 | 0.38 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Fish passage upgrades | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Fish passage upgrades | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Fish passage upgrades | Other Construction Equipment | | 1 | 4.00 | 172 | 0.42 |
| Fish passage upgrades | Pumps | | 1 | 24.00 | 84 | 0.74 |
| Fish passage upgrades | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Site cleanup and testing | Cranes | | 0 | 0.00 | 231 | 0.29 |
| Site cleanup and testing | Excavators | | 1 | 8.00 | 158 | 0.38 |
| Site cleanup and testing | Forklifts | | 0 | 0.00 | 89 | 0.20 |
| Site cleanup and testing | Tractors/Loaders/Backhoes | | 0 | 0.00 | 97 | 0.37 |

**<u>Trips and VMT</u>**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 4 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Intake design upgrades | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Hydraulic modifications | 4 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Improvements to check dam | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Fish passage upgrades | 5 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup and testing | 1 | 6.00 | 3.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2028

**<u>Unmitigated Construction On-Site</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 2.7000e-004 | 0.0000 | 2.7000e-004 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.0114 | 0.0978 | 0.1624 | 2.8000e-004 | | 4.1000e-003 | 4.1000e-003 | | 4.0200e-003 | 4.0200e-003 | 0.0000 | 23.9100 | 23.9100 | 2.6000e-003 | 0.0000 | 23.9750 |
| **Total** | **0.0114** | **0.0978** | **0.1624** | **2.8000e-004** | **2.7000e-004** | **4.1000e-003** | **4.3700e-003** | **3.0000e-005** | **4.0200e-003** | **4.0500e-003** | **0.0000** | **23.9100** | **23.9100** | **2.6000e-003** | **0.0000** | **23.9750** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 7.0000e-005 | 2.7100e-003 | 6.9000e-004 | 1.0000e-005 | 2.1000e-004 | 0.0000 | 2.1000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.7874 | 0.7874 | 3.0000e-005 | 0.0000 | 0.7881 |
| Worker | 1.7000e-004 | 1.2000e-004 | 1.2000e-003 | 0.0000 | 5.1000e-004 | 0.0000 | 5.1000e-004 | 1.3000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 0.3513 | 0.3513 | 1.0000e-005 | 0.0000 | 0.3515 |
| **Total** | **2.5000e-004** | **3.1900e-003** | **2.0100e-003** | **1.0000e-005** | **7.5000e-004** | **0.0000** | **7.5000e-004** | **2.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **1.2841** | **1.2841** | **5.0000e-005** | **0.0000** | **1.2851** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.2000e-004 | 0.0000 | 1.2000e-004 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0114 | 0.0978 | 0.1624 | 2.8000e-004 | | 4.1000e-003 | 4.1000e-003 | | 4.0200e-003 | 4.0200e-003 | 0.0000 | 23.9100 | 23.9100 | 2.6000e-003 | 0.0000 | 23.9750 |
| **Total** | **0.0114** | **0.0978** | **0.1624** | **2.8000e-004** | **1.2000e-004** | **4.1000e-003** | **4.2200e-003** | **1.0000e-005** | **4.0200e-003** | **4.0300e-003** | **0.0000** | **23.9100** | **23.9100** | **2.6000e-003** | **0.0000** | **23.9750** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 7.0000e-005 | 2.7100e-003 | 6.9000e-004 | 1.0000e-005 | 2.1000e-004 | 0.0000 | 2.1000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.7874 | 0.7874 | 3.0000e-005 | 0.0000 | 0.7881 |
| Worker | 1.7000e-004 | 1.2000e-004 | 1.2000e-003 | 0.0000 | 5.1000e-004 | 0.0000 | 5.1000e-004 | 1.3000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 0.3513 | 0.3513 | 1.0000e-005 | 0.0000 | 0.3515 |
| **Total** | **2.5000e-004** | **3.1900e-003** | **2.0100e-003** | **1.0000e-005** | **7.5000e-004** | **0.0000** | **7.5000e-004** | **2.0000e-004** | **0.0000** | **2.1000e-004** | **0.0000** | **1.2841** | **1.2841** | **5.0000e-005** | **0.0000** | **1.2851** |

## 3.3 Intake design upgrades - 2028

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0388 | 0.3316 | 0.4334 | 8.3000e-004 | | 0.0139 | 0.0139 | | 0.0136 | 0.0136 | 0.0000 | 70.9661 | 70.9661 | 6.2300e-003 | 0.0000 | 71.1218 |
| **Total** | **0.0388** | **0.3316** | **0.4334** | **8.3000e-004** | | **0.0139** | **0.0139** | | **0.0136** | **0.0136** | **0.0000** | **70.9661** | **70.9661** | **6.2300e-003** | **0.0000** | **71.1218** |

**Unmitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 1.8000e-004 | 6.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0727 | 0.0727 | 0.0000 | 0.0000 | 0.0727 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 1.9000e-004 | 7.6300e-003 | 1.9400e-003 | 2.0000e-005 | 1.0000e-003 | 1.0000e-005 | 1.0200e-003 | 2.7000e-004 | 1.0000e-005 | 2.8000e-004 | 0.0000 | 2.2146 | 2.2146 | 8.0000e-005 | 0.0000 | 2.2165 |
| Worker | 4.9000e-004 | 3.3000e-004 | 3.3900e-003 | 1.0000e-005 | 2.6600e-003 | 1.0000e-005 | 2.6700e-003 | 6.8000e-004 | 1.0000e-005 | 6.9000e-004 | 0.0000 | 0.9881 | 0.9881 | 2.0000e-005 | 0.0000 | 0.9887 |
| **Total** | **6.8000e-004** | **8.1400e-003** | **5.3900e-003** | **3.0000e-005** | **3.6900e-003** | **2.0000e-005** | **3.7200e-003** | **9.6000e-004** | **2.0000e-005** | **9.8000e-004** | **0.0000** | **3.2754** | **3.2754** | **1.0000e-004** | **0.0000** | **3.2779** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0388 | 0.3316 | 0.4334 | 8.3000e-004 | | 0.0139 | 0.0139 | | 0.0136 | 0.0136 | 0.0000 | 70.9660 | 70.9660 | 6.2300e-003 | 0.0000 | 71.1217 |
| **Total** | **0.0388** | **0.3316** | **0.4334** | **8.3000e-004** | | **0.0139** | **0.0139** | | **0.0136** | **0.0136** | **0.0000** | **70.9660** | **70.9660** | **6.2300e-003** | **0.0000** | **71.1217** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 1.8000e-004 | 6.0000e-005 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0727 | 0.0727 | 0.0000 | 0.0000 | 0.0727 |
| Vendor | 1.9000e-004 | 7.6300e-003 | 1.9400e-003 | 2.0000e-005 | 1.0000e-003 | 1.0000e-005 | 1.0200e-003 | 2.7000e-004 | 1.0000e-005 | 2.8000e-004 | 0.0000 | 2.2146 | 2.2146 | 8.0000e-005 | 0.0000 | 2.2165 |
| Worker | 4.9000e-004 | 3.3000e-004 | 3.3900e-003 | 1.0000e-005 | 2.6600e-003 | 1.0000e-005 | 2.6700e-003 | 6.8000e-004 | 1.0000e-005 | 6.9000e-004 | 0.0000 | 0.9881 | 0.9881 | 2.0000e-005 | 0.0000 | 0.9887 |
| **Total** | **6.8000e-004** | **8.1400e-003** | **5.3900e-003** | **3.0000e-005** | **3.6900e-003** | **2.0000e-005** | **3.7200e-003** | **9.6000e-004** | **2.0000e-005** | **9.8000e-004** | **0.0000** | **3.2754** | **3.2754** | **1.0000e-004** | **0.0000** | **3.2779** |

## 3.4 Hydraulic modifications - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0278 | 0.2385 | 0.3958 | 6.7000e-004 | | 9.9800e-003 | 9.9800e-003 | | 9.8100e-003 | 9.8100e-003 | 0.0000 | 58.2806 | 58.2806 | 6.3400e-003 | 0.0000 | 58.4390 |
| **Total** | **0.0278** | **0.2385** | **0.3958** | **6.7000e-004** | | **9.9800e-003** | **9.9800e-003** | | **9.8100e-003** | **9.8100e-003** | **0.0000** | **58.2806** | **58.2806** | **6.3400e-003** | **0.0000** | **58.4390** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 1.6000e-004 | 6.6100e-003 | 1.6800e-003 | 2.0000e-005 | 5.1000e-004 | 1.0000e-005 | 5.2000e-004 | 1.5000e-004 | 1.0000e-005 | 1.6000e-004 | 0.0000 | 1.9193 | 1.9193 | 7.0000e-005 | 0.0000 | 1.9210 |
| Worker | 4.2000e-004 | 2.8000e-004 | 2.9300e-003 | 1.0000e-005 | 1.2300e-003 | 1.0000e-005 | 1.2400e-003 | 3.3000e-004 | 1.0000e-005 | 3.4000e-004 | 0.0000 | 0.8564 | 0.8564 | 2.0000e-005 | 0.0000 | 0.8569 |
| **Total** | **5.9000e-004** | **7.2500e-003** | **4.7300e-003** | **3.0000e-005** | **1.7700e-003** | **2.0000e-005** | **1.7900e-003** | **4.9000e-004** | **2.0000e-005** | **5.1000e-004** | **0.0000** | **2.9210** | **2.9210** | **1.0000e-004** | **0.0000** | **2.9233** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.0278 | 0.2385 | 0.3958 | 6.7000e-004 | | 9.9800e-003 | 9.9800e-003 | | 9.8100e-003 | 9.8100e-003 | 0.0000 | 58.2805 | 58.2805 | 6.3400e-003 | 0.0000 | 58.4389 |
| **Total** | **0.0278** | **0.2385** | **0.3958** | **6.7000e-004** | | **9.9800e-003** | **9.9800e-003** | | **9.8100e-003** | **9.8100e-003** | **0.0000** | **58.2805** | **58.2805** | **6.3400e-003** | **0.0000** | **58.4389** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 1.6000e-004 | 6.6100e-003 | 1.6800e-003 | 2.0000e-005 | 5.1000e-004 | 1.0000e-005 | 5.2000e-004 | 1.5000e-004 | 1.0000e-005 | 1.6000e-004 | 0.0000 | 1.9193 | 1.9193 | 7.0000e-005 | 0.0000 | 1.9210 |
| Worker | 4.2000e-004 | 2.8000e-004 | 2.9300e-003 | 1.0000e-005 | 1.2300e-003 | 1.0000e-005 | 1.2400e-003 | 3.3000e-004 | 1.0000e-005 | 3.4000e-004 | 0.0000 | 0.8564 | 0.8564 | 2.0000e-005 | 0.0000 | 0.8569 |
| **Total** | **5.9000e-004** | **7.2500e-003** | **4.7300e-003** | **3.0000e-005** | **1.7700e-003** | **2.0000e-005** | **1.7900e-003** | **4.9000e-004** | **2.0000e-005** | **5.1000e-004** | **0.0000** | **2.9210** | **2.9210** | **1.0000e-004** | **0.0000** | **2.9233** |

## 3.5 Improvements to check dam - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0117 | 0.0971 | 0.1464 | 2.6000e-004 | | 4.1400e-003 | 4.1400e-003 | | 4.1000e-003 | 4.1000e-003 | 0.0000 | 21.8897 | 21.8897 | 1.5000e-003 | 0.0000 | 21.9273 |
| **Total** | **0.0117** | **0.0971** | **0.1464** | **2.6000e-004** | | **4.1400e-003** | **4.1400e-003** | | **4.1000e-003** | **4.1000e-003** | **0.0000** | **21.8897** | **21.8897** | **1.5000e-003** | **0.0000** | **21.9273** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 1.8000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0727 | 0.0727 | 0.0000 | 0.0000 | 0.0727 |
| Vendor | 6.0000e-005 | 2.5400e-003 | 6.5000e-004 | 1.0000e-005 | 2.0000e-004 | 0.0000 | 2.0000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.7382 | 0.7382 | 3.0000e-005 | 0.0000 | 0.7388 |
| Worker | 1.6000e-004 | 1.1000e-004 | 1.1300e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3294 | 0.3294 | 1.0000e-005 | 0.0000 | 0.3296 |
| **Total** | **2.2000e-004** | **2.8300e-003** | **1.8400e-003** | **1.0000e-005** | **6.9000e-004** | **0.0000** | **7.0000e-004** | **1.9000e-004** | **0.0000** | **2.0000e-004** | **0.0000** | **1.1402** | **1.1402** | **4.0000e-005** | **0.0000** | **1.1411** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0117 | 0.0971 | 0.1464 | 2.6000e-004 | | 4.1400e-003 | 4.1400e-003 | | 4.1000e-003 | 4.1000e-003 | 0.0000 | 21.8897 | 21.8897 | 1.5000e-003 | 0.0000 | 21.9273 |
| **Total** | **0.0117** | **0.0971** | **0.1464** | **2.6000e-004** | | **4.1400e-003** | **4.1400e-003** | | **4.1000e-003** | **4.1000e-003** | **0.0000** | **21.8897** | **21.8897** | **1.5000e-003** | **0.0000** | **21.9273** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.0000 | 1.8000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0727 | 0.0727 | 0.0000 | 0.0000 | 0.0727 |
| Vendor | 6.0000e-005 | 2.5400e-003 | 6.5000e-004 | 1.0000e-005 | 2.0000e-004 | 0.0000 | 2.0000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.7382 | 0.7382 | 3.0000e-005 | 0.0000 | 0.7388 |
| Worker | 1.6000e-004 | 1.1000e-004 | 1.1300e-003 | 0.0000 | 4.7000e-004 | 0.0000 | 4.8000e-004 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 0.3294 | 0.3294 | 1.0000e-005 | 0.0000 | 0.3296 |
| **Total** | **2.2000e-004** | **2.8300e-003** | **1.8400e-003** | **1.0000e-005** | **6.9000e-004** | **0.0000** | **7.0000e-004** | **1.9000e-004** | **0.0000** | **2.0000e-004** | **0.0000** | **1.1402** | **1.1402** | **4.0000e-005** | **0.0000** | **1.1411** |

## 3.6 Fish passage upgrades - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0212 | 0.1838 | 0.3010 | 5.1000e-004 | | 7.8800e-003 | 7.8800e-003 | | 7.6800e-003 | 7.6800e-003 | 0.0000 | 44.0138 | 44.0138 | 5.5700e-003 | 0.0000 | 44.1531 |
| **Total** | **0.0212** | **0.1838** | **0.3010** | **5.1000e-004** | | **7.8800e-003** | **7.8800e-003** | | **7.6800e-003** | **7.6800e-003** | **0.0000** | **44.0138** | **44.0138** | **5.5700e-003** | **0.0000** | **44.1531** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 1.1000e-004 | 4.5800e-003 | 1.1600e-003 | 1.0000e-005 | 3.5000e-004 | 1.0000e-005 | 3.6000e-004 | 1.0000e-004 | 1.0000e-005 | 1.1000e-004 | 0.0000 | 1.3288 | 1.3288 | 5.0000e-005 | 0.0000 | 1.3299 |
| Worker | 2.9000e-004 | 2.0000e-004 | 2.0300e-003 | 1.0000e-005 | 8.5000e-004 | 1.0000e-005 | 8.6000e-004 | 2.3000e-004 | 0.0000 | 2.3000e-004 | 0.0000 | 0.5929 | 0.5929 | 1.0000e-005 | 0.0000 | 0.5932 |
| **Total** | **4.1000e-004** | **5.1400e-003** | **3.3100e-003** | **2.0000e-005** | **1.2300e-003** | **2.0000e-005** | **1.2500e-003** | **3.4000e-004** | **1.0000e-005** | **3.5000e-004** | **0.0000** | **2.0669** | **2.0669** | **7.0000e-005** | **0.0000** | **2.0686** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0212 | 0.1838 | 0.3010 | 5.1000e-004 | | 7.8800e-003 | 7.8800e-003 | | 7.6800e-003 | 7.6800e-003 | 0.0000 | 44.0137 | 44.0137 | 5.5700e-003 | 0.0000 | 44.1530 |
| **Total** | **0.0212** | **0.1838** | **0.3010** | **5.1000e-004** | | **7.8800e-003** | **7.8800e-003** | | **7.6800e-003** | **7.6800e-003** | **0.0000** | **44.0137** | **44.0137** | **5.5700e-003** | **0.0000** | **44.1530** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 1.0000e-005 | 3.6000e-004 | 1.2000e-004 | 0.0000 | 3.0000e-005 | 0.0000 | 3.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.1453 | 0.1453 | 1.0000e-005 | 0.0000 | 0.1455 |
| Vendor | 1.1000e-004 | 4.5800e-003 | 1.1600e-003 | 1.0000e-005 | 3.5000e-004 | 1.0000e-005 | 3.6000e-004 | 1.0000e-004 | 1.0000e-005 | 1.1000e-004 | 0.0000 | 1.3288 | 1.3288 | 5.0000e-005 | 0.0000 | 1.3299 |
| Worker | 2.9000e-004 | 2.0000e-004 | 2.0300e-003 | 1.0000e-005 | 8.5000e-004 | 1.0000e-005 | 8.6000e-004 | 2.3000e-004 | 0.0000 | 2.3000e-004 | 0.0000 | 0.5929 | 0.5929 | 1.0000e-005 | 0.0000 | 0.5932 |
| **Total** | **4.1000e-004** | **5.1400e-003** | **3.3100e-003** | **2.0000e-005** | **1.2300e-003** | **2.0000e-005** | **1.2500e-003** | **3.4000e-004** | **1.0000e-005** | **3.5000e-004** | **0.0000** | **2.0669** | **2.0669** | **7.0000e-005** | **0.0000** | **2.0686** |

## 3.7 Site cleanup and testing - 2028

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | tons/yr | | | | | | | | | MT/yr | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.0900e-003 | 7.9400e-003 | 0.0212 | 3.0000e-005 | | 3.9000e-004 | 3.9000e-004 | | 3.6000e-004 | 3.6000e-004 | 0.0000 | 2.9503 | 2.9503 | 9.5000e-004 | 0.0000 | 2.9742 |
| **Total** | **1.0900e-003** | **7.9400e-003** | **0.0212** | **3.0000e-005** | | **3.9000e-004** | **3.9000e-004** | | **3.6000e-004** | **3.6000e-004** | **0.0000** | **2.9503** | **2.9503** | **9.5000e-004** | **0.0000** | **2.9742** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 1.8000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0727 | 0.0727 | 0.0000 | 0.0000 | 0.0727 |
| Vendor | 4.0000e-005 | 1.6500e-003 | 4.2000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.4798 | 0.4798 | 2.0000e-005 | 0.0000 | 0.4802 |
| Worker | 1.1000e-004 | 7.0000e-005 | 7.3000e-004 | 0.0000 | 3.1000e-004 | 0.0000 | 3.1000e-004 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 0.0000 | 0.2141 | 0.2141 | 1.0000e-005 | 0.0000 | 0.2142 |
| **Total** | **1.5000e-004** | **1.9000e-003** | **1.2100e-003** | **0.0000** | **4.6000e-004** | **0.0000** | **4.6000e-004** | **1.2000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **0.7666** | **0.7666** | **3.0000e-005** | **0.0000** | **0.7672** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.0900e-003 | 7.9400e-003 | 0.0212 | 3.0000e-005 | | 3.9000e-004 | 3.9000e-004 | | 3.6000e-004 | 3.6000e-004 | 0.0000 | 2.9503 | 2.9503 | 9.5000e-004 | 0.0000 | 2.9742 |
| **Total** | **1.0900e-003** | **7.9400e-003** | **0.0212** | **3.0000e-005** | | **3.9000e-004** | **3.9000e-004** | | **3.6000e-004** | **3.6000e-004** | **0.0000** | **2.9503** | **2.9503** | **9.5000e-004** | **0.0000** | **2.9742** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 1.8000e-004 | 6.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0727 | 0.0727 | 0.0000 | 0.0000 | 0.0727 |
| Vendor | 4.0000e-005 | 1.6500e-003 | 4.2000e-004 | 0.0000 | 1.3000e-004 | 0.0000 | 1.3000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.4798 | 0.4798 | 2.0000e-005 | 0.0000 | 0.4802 |
| Worker | 1.1000e-004 | 7.0000e-005 | 7.3000e-004 | 0.0000 | 3.1000e-004 | 0.0000 | 3.1000e-004 | 8.0000e-005 | 0.0000 | 8.0000e-005 | 0.0000 | 0.2141 | 0.2141 | 1.0000e-005 | 0.0000 | 0.2142 |
| **Total** | **1.5000e-004** | **1.9000e-003** | **1.2100e-003** | **0.0000** | **4.6000e-004** | **0.0000** | **4.6000e-004** | **1.2000e-004** | **0.0000** | **1.3000e-004** | **0.0000** | **0.7666** | **0.7666** | **3.0000e-005** | **0.0000** | **0.7672** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | Unmitigated | Mitigated |
|---|---|---|---|

| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
|---|---|---|---|---|---|
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.599608 | 0.024515 | 0.205520 | 0.108091 | 0.013987 | 0.004134 | 0.021227 | 0.013186 | 0.001229 | 0.001862 | 0.004978 | 0.000953 | 0.000710 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Total | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
|---|---|---|---|---|---|

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| Unmitigated | 7.8100e-003 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **7.8100e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 7.8100e-003 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 5.0000e-005 |
| **Total** | **7.8100e-003** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **5.0000e-005** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| Category | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| Land Use | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| Land Use | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | Mgal | MT/yr | | | |

| | | | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Tait Diversion

**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2029 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Tait diversion improvement construction

Land Use - Surrogate land use for Tait diversion facility improvements

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - Assumed 0.5 acre would be disturbed and 144 CY material exported

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 1000 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 3000 | 0 |
| tblConstructionPhase | NumDays | 100.00 | 45.00 |
| tblConstructionPhase | NumDays | 100.00 | 39.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 27.00 |
| tblConstructionPhase | NumDays | 100.00 | 13.00 |
| tblConstructionPhase | NumDays | 1.00 | 16.00 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 144.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 18.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 3.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2028 | 3.0450 | 25.9216 | 40.3096 | 0.0719 | 0.1895 | 1.0663 | 1.2557 | 0.0515 | 1.0513 | 1.1028 | 0.0000 | 6,851.2888 | 6,851.2888 | 0.5899 | 0.0000 | 6,866.0366 |
| **Maximum** | **3.0450** | **25.9216** | **40.3096** | **0.0719** | **0.1895** | **1.0663** | **1.2557** | **0.0515** | **1.0513** | **1.1028** | **0.0000** | **6,851.2888** | **6,851.2888** | **0.5899** | **0.0000** | **6,866.0366** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2028 | 3.0450 | 25.9216 | 40.3096 | 0.0719 | 0.1895 | 1.0663 | 1.2557 | 0.0515 | 1.0513 | 1.1028 | 0.0000 | 6,851.2888 | 6,851.2888 | 0.5899 | 0.0000 | 6,866.0366 |
| **Maximum** | **3.0450** | **25.9216** | **40.3096** | **0.0719** | **0.1895** | **1.0663** | **1.2557** | **0.0515** | **1.0513** | **1.1028** | **0.0000** | **6,851.2888** | **6,851.2888** | **0.5899** | **0.0000** | **6,866.0366** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/15/2028 | 6/5/2028 | 5 | 16 | |
| 2 | Intake design upgrades | Building Construction | 6/6/2028 | 8/7/2028 | 5 | 45 | |
| 3 | Hydraulic modifications | Building Construction | 8/8/2028 | 10/1/2028 | 5 | 39 | |
| 4 | Improvements to check dam | Building Construction | 10/1/2028 | 10/20/2028 | 5 | 15 | |
| 5 | Fish passage upgrades | Building Construction | 10/21/2028 | 11/28/2028 | 5 | 27 | |
| 6 | Site cleanup and testing | Building Construction | 11/29/2028 | 12/15/2028 | 5 | 13 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Excavators | 1 | 8.00 | 158 | 0.38 |
| Site Preparation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Pumps | 1 | 24.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Intake design upgrades | Air Compressors | 1 | 8.00 | 78 | 0.48 |

| | | | | | |
|---|---|---|---|---|---|
| Intake design upgrades | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Intake design upgrades | Cranes | 1 | 8.00 | 231 | 0.29 |
| Intake design upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Intake design upgrades | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Intake design upgrades | Pumps | 1 | 24.00 | 84 | 0.74 |
| Intake design upgrades | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Hydraulic modifications | Cranes | 0 | 0.00 | 231 | 0.29 |
| Hydraulic modifications | Excavators | 1 | 8.00 | 158 | 0.38 |
| Hydraulic modifications | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Hydraulic modifications | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Hydraulic modifications | Pumps | 1 | 24.00 | 84 | 0.74 |
| Hydraulic modifications | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Improvements to check dam | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Improvements to check dam | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Improvements to check dam | Cranes | 0 | 0.00 | 231 | 0.29 |
| Improvements to check dam | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Improvements to check dam | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Improvements to check dam | Other Construction Equipment | 1 | 4.00 | 172 | 0.42 |
| Improvements to check dam | Pumps | 1 | 24.00 | 84 | 0.74 |
| Improvements to check dam | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Fish passage upgrades | Cranes | 0 | 0.00 | 231 | 0.29 |
| Fish passage upgrades | Excavators | 1 | 8.00 | 158 | 0.38 |
| Fish passage upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Fish passage upgrades | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Fish passage upgrades | Other Construction Equipment | 1 | 4.00 | 172 | 0.42 |
| Fish passage upgrades | Pumps | 1 | 24.00 | 84 | 0.74 |
| Fish passage upgrades | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Site cleanup and testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Site cleanup and testing | Excavators | 1 | 8.00 | 158 | 0.38 |
| Site cleanup and testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Site cleanup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 4 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Intake design upgrades | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Hydraulic modifications | 4 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Improvements to check dam | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Fish passage upgrades | 5 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup and testing | 1 | 6.00 | 3.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0339 | 0.0000 | 0.0339 | 3.7000e-003 | 0.0000 | 3.7000e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | **0.0339** | **0.5120** | **0.5459** | **3.7000e-003** | **0.5028** | **0.5065** | | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.2200e-003 | 0.0446 | 0.0144 | 1.9000e-004 | 4.3300e-003 | 1.1000e-004 | 4.4400e-003 | 1.1800e-003 | 1.1000e-004 | 1.2900e-003 | | 20.1420 | 20.1420 | 8.1000e-004 | | 20.1622 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0307** | **0.3940** | **0.2529** | **1.7300e-003** | **0.0970** | **1.0400e-003** | **0.0981** | **0.0264** | **9.8000e-004** | **0.0274** | | **180.4019** | **180.4019** | **5.7000e-003** | | **180.5444** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0153 | 0.0000 | 0.0153 | 1.6600e-003 | 0.0000 | 1.6600e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | 0.0000 | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | **0.0153** | **0.5120** | **0.5272** | **1.6600e-003** | **0.5028** | **0.5045** | **0.0000** | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.2200e-003 | 0.0446 | 0.0144 | 1.9000e-004 | 4.3300e-003 | 1.1000e-004 | 4.4400e-003 | 1.1800e-003 | 1.1000e-004 | 1.2900e-003 | | 20.1420 | 20.1420 | 8.1000e-004 | | 20.1622 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0307** | **0.3940** | **0.2529** | **1.7300e-003** | **0.0970** | **1.0400e-003** | **0.0981** | **0.0264** | **9.8000e-004** | **0.0274** | | **180.4019** | **180.4019** | **5.7000e-003** | | **180.5444** |

## 3.3 Intake design upgrades - 2028

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7242 | 14.7373 | 19.2627 | 0.0368 | | 0.6156 | 0.6156 | | 0.6048 | 0.6048 | | 3,476.7449 | 3,476.7449 | 0.3051 | | 3,484.3729 |
| **Total** | **1.7242** | **14.7373** | **19.2627** | **0.0368** | | **0.6156** | **0.6156** | | **0.6048** | **0.6048** | | **3,476.7449** | **3,476.7449** | **0.3051** | | **3,484.3729** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.2000e-004 | 7.9200e-003 | 2.5700e-003 | 3.0000e-005 | 1.3600e-003 | 2.0000e-005 | 1.3800e-003 | 3.5000e-004 | 2.0000e-005 | 3.7000e-004 | | 3.5808 | 3.5808 | 1.4000e-004 | | 3.5844 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0463 | 5.3000e-004 | 0.0468 | 0.0125 | 5.0000e-004 | 0.0130 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.1228 | 4.0000e-004 | 0.1232 | 0.0315 | 3.7000e-004 | 0.0318 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0297** | **0.3573** | **0.2410** | **1.5700e-003** | **0.1705** | **9.5000e-004** | **0.1714** | **0.0443** | **8.9000e-004** | **0.0452** | | **163.8408** | **163.8408** | **5.0300e-003** | | **163.9666** |

### Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7242 | 14.7373 | 19.2627 | 0.0368 | | 0.6156 | 0.6156 | | 0.6048 | 0.6048 | 0.0000 | 3,476.7449 | 3,476.7449 | 0.3051 | | 3,484.3729 |
| **Total** | **1.7242** | **14.7373** | **19.2627** | **0.0368** | | **0.6156** | **0.6156** | | **0.6048** | **0.6048** | **0.0000** | **3,476.7449** | **3,476.7449** | **0.3051** | | **3,484.3729** |

**Mitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.2000e-004 | 7.9200e-003 | 2.5700e-003 | 3.0000e-005 | 1.3600e-003 | 2.0000e-005 | 1.3800e-003 | 3.5000e-004 | 2.0000e-005 | 3.7000e-004 | | 3.5808 | 3.5808 | 1.4000e-004 | | 3.5844 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0463 | 5.3000e-004 | 0.0468 | 0.0125 | 5.0000e-004 | 0.0130 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.1228 | 4.0000e-004 | 0.1232 | 0.0315 | 3.7000e-004 | 0.0318 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0297** | **0.3573** | **0.2410** | **1.5700e-003** | **0.1705** | **9.5000e-004** | **0.1714** | **0.0443** | **8.9000e-004** | **0.0452** | | **163.8408** | **163.8408** | **5.0300e-003** | | **163.9666** |

## 3.4 Hydraulic modifications - 2028

**Unmitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | | **0.5120** | **0.5120** | | **0.5028** | **0.5028** | | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.0000e-004 | 0.0183 | 5.9200e-003 | 8.0000e-005 | 1.7800e-003 | 5.0000e-005 | 1.8200e-003 | 4.9000e-004 | 4.0000e-005 | 5.3000e-004 | | 8.2634 | 8.2634 | 3.3000e-004 | | 8.2717 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0299** | **0.3677** | **0.2443** | **1.6200e-003** | **0.0945** | **9.8000e-004** | **0.0954** | **0.0257** | **9.1000e-004** | **0.0266** | | **168.5234** | **168.5234** | **5.2200e-003** | | **168.6539** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | 0.0000 | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | | **0.5120** | **0.5120** | | **0.5028** | **0.5028** | **0.0000** | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.0000e-004 | 0.0183 | 5.9200e-003 | 8.0000e-005 | 1.7800e-003 | 5.0000e-005 | 1.8200e-003 | 4.9000e-004 | 4.0000e-005 | 5.3000e-004 | | 8.2634 | 8.2634 | 3.3000e-004 | | 8.2717 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0299** | **0.3677** | **0.2443** | **1.6200e-003** | **0.0945** | **9.8000e-004** | **0.0954** | **0.0257** | **9.1000e-004** | **0.0266** | | **168.5234** | **168.5234** | **5.2200e-003** | | **168.6539** |

## 3.5 Improvements to check dam - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5609 | 12.9502 | 19.5244 | 0.0341 | | 0.5524 | 0.5524 | | 0.5466 | 0.5466 | | 3,217.2311 | 3,217.2311 | 0.2212 | | 3,222.7608 |
| **Total** | **1.5609** | **12.9502** | **19.5244** | **0.0341** | | **0.5524** | **0.5524** | | **0.5466** | **0.5466** | | **3,217.2311** | **3,217.2311** | **0.2212** | | **3,222.7608** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 6.5000e-004 | 0.0238 | 7.7000e-003 | 1.0000e-004 | 2.3100e-003 | 6.0000e-005 | 2.3700e-003 | 6.3000e-004 | 6.0000e-005 | 6.9000e-004 | | 10.7424 | 10.7424 | 4.3000e-004 | | 10.7532 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0301** | **0.3732** | **0.2461** | **1.6400e-003** | **0.0950** | **9.9000e-004** | **0.0960** | **0.0258** | **9.3000e-004** | **0.0268** | | **171.0024** | **171.0024** | **5.3200e-003** | | **171.1354** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5609 | 12.9502 | 19.5244 | 0.0341 | | 0.5524 | 0.5524 | | 0.5466 | 0.5466 | 0.0000 | 3,217.2311 | 3,217.2311 | 0.2212 | | 3,222.7608 |
| **Total** | **1.5609** | **12.9502** | **19.5244** | **0.0341** | | **0.5524** | **0.5524** | | **0.5466** | **0.5466** | **0.0000** | **3,217.2311** | **3,217.2311** | **0.2212** | | **3,222.7608** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 6.5000e-004 | 0.0238 | 7.7000e-003 | 1.0000e-004 | 2.3100e-003 | 6.0000e-005 | 2.3700e-003 | 6.3000e-004 | 6.0000e-005 | 6.9000e-004 | | 10.7424 | 10.7424 | 4.3000e-004 | | 10.7532 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0301** | **0.3732** | **0.2461** | **1.6400e-003** | **0.0950** | **9.9000e-004** | **0.0960** | **0.0258** | **9.3000e-004** | **0.0268** | | **171.0024** | **171.0024** | **5.3200e-003** | | **171.1354** |

# 3.6 Fish passage upgrades - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5736 | 13.6114 | 22.2929 | 0.0377 | | 0.5834 | 0.5834 | | 0.5685 | 0.5685 | | 3,593.8445 | 3,593.8445 | 0.4550 | | 3,605.2190 |
| **Total** | **1.5736** | **13.6114** | **22.2929** | **0.0377** | | **0.5834** | **0.5834** | | **0.5685** | **0.5685** | | **3,593.8445** | **3,593.8445** | **0.4550** | | **3,605.2190** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 7.2000e-004 | 0.0264 | 8.5600e-003 | 1.1000e-004 | 2.5700e-003 | 7.0000e-005 | 2.6300e-003 | 7.0000e-004 | 6.0000e-005 | 7.7000e-004 | | 11.9360 | 11.9360 | 4.8000e-004 | | 11.9480 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0302** | **0.3758** | **0.2470** | **1.6500e-003** | **0.0953** | **1.0000e-003** | **0.0963** | **0.0259** | **9.3000e-004** | **0.0268** | | **172.1960** | **172.1960** | **5.3700e-003** | | **172.3302** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.5736 | 13.6114 | 22.2929 | 0.0377 | | 0.5834 | 0.5834 | | 0.5685 | 0.5685 | 0.0000 | 3,593.8445 | 3,593.8445 | 0.4550 | | 3,605.2190 |
| **Total** | **1.5736** | **13.6114** | **22.2929** | **0.0377** | | **0.5834** | **0.5834** | | **0.5685** | **0.5685** | **0.0000** | **3,593.8445** | **3,593.8445** | **0.4550** | | **3,605.2190** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 7.2000e-004 | 0.0264 | 8.5600e-003 | 1.1000e-004 | 2.5700e-003 | 7.0000e-005 | 2.6300e-003 | 7.0000e-004 | 6.0000e-005 | 7.7000e-004 | | 11.9360 | 11.9360 | 4.8000e-004 | | 11.9480 |
| Vendor | 8.1200e-003 | 0.3366 | 0.0815 | 1.0300e-003 | 0.0270 | 5.3000e-004 | 0.0275 | 7.7600e-003 | 5.0000e-004 | 8.2600e-003 | | 109.4924 | 109.4924 | 3.6500e-003 | | 109.5836 |
| Worker | 0.0213 | 0.0128 | 0.1570 | 5.1000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 50.7676 | 50.7676 | 1.2400e-003 | | 50.7986 |
| **Total** | **0.0302** | **0.3758** | **0.2470** | **1.6500e-003** | **0.0953** | **1.0000e-003** | **0.0963** | **0.0259** | **9.3000e-004** | **0.0268** | | **172.1960** | **172.1960** | **5.3700e-003** | | **172.3302** |

## 3.7 Site cleanup and testing - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.1671 | 1.2217 | 3.2594 | 5.1700e-003 | | 0.0599 | 0.0599 | | 0.0551 | 0.0551 | | 500.3379 | 500.3379 | 0.1618 | | 504.3834 |
| **Total** | **0.1671** | **1.2217** | **3.2594** | **5.1700e-003** | | **0.0599** | **0.0599** | | **0.0551** | **0.0551** | | **500.3379** | **500.3379** | **0.1618** | | **504.3834** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 7.5000e-004 | 0.0274 | 8.8800e-003 | 1.2000e-004 | 2.6700e-003 | 7.0000e-005 | 2.7300e-003 | 7.3000e-004 | 7.0000e-005 | 7.9000e-004 | | 12.3951 | 12.3951 | 5.0000e-004 | | 12.4075 |
| Vendor | 6.0900e-003 | 0.2525 | 0.0611 | 7.7000e-004 | 0.0202 | 3.9000e-004 | 0.0206 | 5.8200e-003 | 3.8000e-004 | 6.1900e-003 | | 82.1193 | 82.1193 | 2.7400e-003 | | 82.1877 |
| Worker | 0.0160 | 9.5700e-003 | 0.1177 | 3.8000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 38.0757 | 38.0757 | 9.3000e-004 | | 38.0990 |
| **Total** | **0.0228** | **0.2895** | **0.1877** | **1.2700e-003** | **0.0722** | **7.6000e-004** | **0.0729** | **0.0196** | **7.3000e-004** | **0.0203** | | **132.5901** | **132.5901** | **4.1700e-003** | | **132.6942** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.1671 | 1.2217 | 3.2594 | 5.1700e-003 | | 0.0599 | 0.0599 | | 0.0551 | 0.0551 | 0.0000 | 500.3379 | 500.3379 | 0.1618 | | 504.3834 |
| **Total** | **0.1671** | **1.2217** | **3.2594** | **5.1700e-003** | | **0.0599** | **0.0599** | | **0.0551** | **0.0551** | **0.0000** | **500.3379** | **500.3379** | **0.1618** | | **504.3834** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 7.5000e-004 | 0.0274 | 8.8800e-003 | 1.2000e-004 | 2.6700e-003 | 7.0000e-005 | 2.7300e-003 | 7.3000e-004 | 7.0000e-005 | 7.9000e-004 | | 12.3951 | 12.3951 | 5.0000e-004 | | 12.4075 |
| Vendor | 6.0900e-003 | 0.2525 | 0.0611 | 7.7000e-004 | 0.0202 | 3.9000e-004 | 0.0206 | 5.8200e-003 | 3.8000e-004 | 6.1900e-003 | | 82.1193 | 82.1193 | 2.7400e-003 | | 82.1877 |
| Worker | 0.0160 | 9.5700e-003 | 0.1177 | 3.8000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 38.0757 | 38.0757 | 9.3000e-004 | | 38.0990 |
| **Total** | **0.0228** | **0.2895** | **0.1877** | **1.2700e-003** | **0.0722** | **7.6000e-004** | **0.0729** | **0.0196** | **7.3000e-004** | **0.0203** | | **132.5901** | **132.5901** | **4.1700e-003** | | **132.6942** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.599608 | 0.024515 | 0.205520 | 0.108091 | 0.013987 | 0.004134 | 0.021227 | 0.013186 | 0.001229 | 0.001862 | 0.004978 | 0.000953 | 0.000710 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Tait Diversion
**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 2.00 | 1000sqft | 0.05 | 2,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2029 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Tait diversion improvement construction

Land Use - Surrogate land use for Tait diversion facility improvements

Construction Phase - Construction schedule based on City input

Off-road Equipment - Equipment based on City input

Trips and VMT - Construction vehicle information based on City input

Grading - Assumed 0.5 acre would be disturbed and 144 CY material exported

Vehicle Trips - Modeling construction only

Area Coating - Modeling construction only

Energy Use - Modeling construction only

Water And Wastewater - Modeling construction only

Solid Waste - Modeling construction only

Construction Off-road Equipment Mitigation - Water exposed area 2x per day to represent City Standard Construction Practices

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblAreaCoating | Area_Nonresidential_Exterior | 1000 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 3000 | 0 |
| tblConstructionPhase | NumDays | 100.00 | 45.00 |
| tblConstructionPhase | NumDays | 100.00 | 39.00 |
| tblConstructionPhase | NumDays | 100.00 | 15.00 |
| tblConstructionPhase | NumDays | 100.00 | 27.00 |
| tblConstructionPhase | NumDays | 100.00 | 13.00 |
| tblConstructionPhase | NumDays | 1.00 | 16.00 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblGrading | AcresOfGrading | 0.00 | 0.50 |
| tblGrading | MaterialExported | 0.00 | 144.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 1.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 2.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 8.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 4.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 2.48 | 0.00 |
| tblTripsAndVMT | HaulingTripNumber | 18.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | HaulingTripNumber | 0.00 | 2.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 4.00 |
| tblTripsAndVMT | VendorTripNumber | 0.00 | 3.00 |
| tblTripsAndVMT | WorkerTripNumber | 10.00 | 8.00 |

| | | | |
|---|---|---|---|
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 8.00 |
| tblTripsAndVMT | WorkerTripNumber | 1.00 | 6.00 |
| tblVehicleTrips | ST_TR | 1.32 | 0.00 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.00 |
| tblWater | IndoorWaterUseRate | 462,500.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2028 | 3.0520 | 25.9301 | 40.3290 | 0.0719 | 0.1895 | 1.0663 | 1.2558 | 0.0515 | 1.0514 | 1.1029 | 0.0000 | 6,841.4835 | 6,841.4835 | 0.5903 | 0.0000 | 6,856.2406 |
| **Maximum** | **3.0520** | **25.9301** | **40.3290** | **0.0719** | **0.1895** | **1.0663** | **1.2558** | **0.0515** | **1.0514** | **1.1029** | **0.0000** | **6,841.4835** | **6,841.4835** | **0.5903** | **0.0000** | **6,856.2406** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2028 | 3.0520 | 25.9301 | 40.3290 | 0.0719 | 0.1895 | 1.0663 | 1.2558 | 0.0515 | 1.0514 | 1.1029 | 0.0000 | 6,841.4835 | 6,841.4835 | 0.5903 | 0.0000 | 6,856.2406 |
| **Maximum** | **3.0520** | **25.9301** | **40.3290** | **0.0719** | **0.1895** | **1.0663** | **1.2558** | **0.0515** | **1.0514** | **1.1029** | **0.0000** | **6,841.4835** | **6,841.4835** | **0.5903** | **0.0000** | **6,856.2406** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | **0.0000** | **4.7000e-004** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 3.0 Construction Detail

## Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 5/15/2028 | 6/5/2028 | 5 | 16 | |
| 2 | Intake design upgrades | Building Construction | 6/6/2028 | 8/7/2028 | 5 | 45 | |
| 3 | Hydraulic modifications | Building Construction | 8/8/2028 | 10/1/2028 | 5 | 39 | |
| 4 | Improvements to check dam | Building Construction | 10/1/2028 | 10/20/2028 | 5 | 15 | |
| 5 | Fish passage upgrades | Building Construction | 10/21/2028 | 11/28/2028 | 5 | 27 | |
| 6 | Site cleanup and testing | Building Construction | 11/29/2028 | 12/15/2028 | 5 | 13 | |

**Acres of Grading (Site Preparation Phase): 0.5**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

## OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Excavators | 1 | 8.00 | 158 | 0.38 |
| Site Preparation | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Site Preparation | Graders | 0 | 0.00 | 187 | 0.41 |
| Site Preparation | Pumps | 1 | 24.00 | 84 | 0.74 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Intake design upgrades | Air Compressors | 1 | 8.00 | 78 | 0.48 |

| | | | | | |
|---|---|---|---|---|---|
| Intake design upgrades | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Intake design upgrades | Cranes | 1 | 8.00 | 231 | 0.29 |
| Intake design upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Intake design upgrades | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Intake design upgrades | Pumps | 1 | 24.00 | 84 | 0.74 |
| Intake design upgrades | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Hydraulic modifications | Cranes | 0 | 0.00 | 231 | 0.29 |
| Hydraulic modifications | Excavators | 1 | 8.00 | 158 | 0.38 |
| Hydraulic modifications | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Hydraulic modifications | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Hydraulic modifications | Pumps | 1 | 24.00 | 84 | 0.74 |
| Hydraulic modifications | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Improvements to check dam | Air Compressors | 1 | 8.00 | 78 | 0.48 |
| Improvements to check dam | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Improvements to check dam | Cranes | 0 | 0.00 | 231 | 0.29 |
| Improvements to check dam | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Improvements to check dam | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Improvements to check dam | Other Construction Equipment | 1 | 4.00 | 172 | 0.42 |
| Improvements to check dam | Pumps | 1 | 24.00 | 84 | 0.74 |
| Improvements to check dam | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Fish passage upgrades | Cranes | 0 | 0.00 | 231 | 0.29 |
| Fish passage upgrades | Excavators | 1 | 8.00 | 158 | 0.38 |
| Fish passage upgrades | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Fish passage upgrades | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Fish passage upgrades | Other Construction Equipment | 1 | 4.00 | 172 | 0.42 |
| Fish passage upgrades | Pumps | 1 | 24.00 | 84 | 0.74 |
| Fish passage upgrades | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Site cleanup and testing | Cranes | 0 | 0.00 | 231 | 0.29 |
| Site cleanup and testing | Excavators | 1 | 8.00 | 158 | 0.38 |
| Site cleanup and testing | Forklifts | 0 | 0.00 | 89 | 0.20 |
| Site cleanup and testing | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |

## Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 4 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Intake design upgrades | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Hydraulic modifications | 4 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Improvements to check dam | 5 | 8.00 | 4.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Fish passage upgrades | 5 | 8.00 | 4.00 | 4.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site cleanup and testing | 1 | 6.00 | 3.00 | 2.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

## 3.2 Site Preparation - 2028

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0339 | 0.0000 | 0.0339 | 3.7000e-003 | 0.0000 | 3.7000e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | **0.0339** | **0.5120** | **0.5459** | **3.7000e-003** | **0.5028** | **0.5065** | | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

### Unmitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.2500e-003 | 0.0452 | 0.0151 | 1.9000e-004 | 4.3300e-003 | 1.2000e-004 | 4.4500e-003 | 1.1800e-003 | 1.1000e-004 | 1.2900e-003 | | 19.8597 | 19.8597 | 8.3000e-004 | | 19.8806 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0342** | **0.3985** | **0.2629** | **1.6900e-003** | **0.0970** | **1.0700e-003** | **0.0981** | **0.0264** | **1.0100e-003** | **0.0274** | | **175.3502** | **175.3502** | **5.8900e-003** | | **175.4977** |

## Mitigated Construction On-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0153 | 0.0000 | 0.0153 | 1.6600e-003 | 0.0000 | 1.6600e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | 0.0000 | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | **0.0153** | **0.5120** | **0.5272** | **1.6600e-003** | **0.5028** | **0.5045** | **0.0000** | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

## Mitigated Construction Off-Site

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 1.2500e-003 | 0.0452 | 0.0151 | 1.9000e-004 | 4.3300e-003 | 1.2000e-004 | 4.4500e-003 | 1.1800e-003 | 1.1000e-004 | 1.2900e-003 | | 19.8597 | 19.8597 | 8.3000e-004 | | 19.8806 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0342** | **0.3985** | **0.2629** | **1.6900e-003** | **0.0970** | **1.0700e-003** | **0.0981** | **0.0264** | **1.0100e-003** | **0.0274** | | **175.3502** | **175.3502** | **5.8900e-003** | | **175.4977** |

## 3.3 Intake design upgrades - 2028

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7242 | 14.7373 | 19.2627 | 0.0368 | | 0.6156 | 0.6156 | | 0.6048 | 0.6048 | | 3,476.7449 | 3,476.7449 | 0.3051 | | 3,484.3729 |
| **Total** | **1.7242** | **14.7373** | **19.2627** | **0.0368** | | **0.6156** | **0.6156** | | **0.6048** | **0.6048** | | **3,476.7449** | **3,476.7449** | **0.3051** | | **3,484.3729** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.2000e-004 | 8.0300e-003 | 2.6800e-003 | 3.0000e-005 | 1.3600e-003 | 2.0000e-005 | 1.3800e-003 | 3.5000e-004 | 2.0000e-005 | 3.7000e-004 | | 3.5306 | 3.5306 | 1.5000e-004 | | 3.5343 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0463 | 5.5000e-004 | 0.0468 | 0.0125 | 5.3000e-004 | 0.0130 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.1228 | 4.0000e-004 | 0.1232 | 0.0315 | 3.7000e-004 | 0.0318 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0331** | **0.3614** | **0.2505** | **1.5300e-003** | **0.1705** | **9.7000e-004** | **0.1714** | **0.0443** | **9.2000e-004** | **0.0452** | | **159.0211** | **159.0211** | **5.2100e-003** | | **159.1514** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.7242 | 14.7373 | 19.2627 | 0.0368 | | 0.6156 | 0.6156 | | 0.6048 | 0.6048 | 0.0000 | 3,476.7449 | 3,476.7449 | 0.3051 | | 3,484.3729 |
| **Total** | **1.7242** | **14.7373** | **19.2627** | **0.0368** | | **0.6156** | **0.6156** | | **0.6048** | **0.6048** | **0.0000** | **3,476.7449** | **3,476.7449** | **0.3051** | | **3,484.3729** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 2.2000e-004 | 8.0300e-003 | 2.6800e-003 | 3.0000e-005 | 1.3600e-003 | 2.0000e-005 | 1.3800e-003 | 3.5000e-004 | 2.0000e-005 | 3.7000e-004 | | 3.5306 | 3.5306 | 1.5000e-004 | | 3.5343 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0463 | 5.5000e-004 | 0.0468 | 0.0125 | 5.3000e-004 | 0.0130 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.1228 | 4.0000e-004 | 0.1232 | 0.0315 | 3.7000e-004 | 0.0318 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0331** | **0.3614** | **0.2505** | **1.5300e-003** | **0.1705** | **9.7000e-004** | **0.1714** | **0.0443** | **9.2000e-004** | **0.0452** | | **159.0211** | **159.0211** | **5.2100e-003** | | **159.1514** |

## 3.4 Hydraulic modifications - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | | **0.5120** | **0.5120** | | **0.5028** | **0.5028** | | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.1000e-004 | 0.0185 | 6.1800e-003 | 8.0000e-005 | 1.7800e-003 | 5.0000e-005 | 1.8200e-003 | 4.9000e-004 | 5.0000e-005 | 5.3000e-004 | | 8.1476 | 8.1476 | 3.4000e-004 | | 8.1561 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0334** | **0.3719** | **0.2540** | **1.5800e-003** | **0.0945** | **1.0000e-003** | **0.0955** | **0.0257** | **9.5000e-004** | **0.0266** | | **163.6381** | **163.6381** | **5.4000e-003** | | **163.7732** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.4241 | 12.2306 | 20.2948 | 0.0346 | | 0.5120 | 0.5120 | | 0.5028 | 0.5028 | 0.0000 | 3,294.5320 | 3,294.5320 | 0.3582 | | 3,303.4865 |
| **Total** | **1.4241** | **12.2306** | **20.2948** | **0.0346** | | **0.5120** | **0.5120** | | **0.5028** | **0.5028** | **0.0000** | **3,294.5320** | **3,294.5320** | **0.3582** | | **3,303.4865** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 5.1000e-004 | 0.0185 | 6.1800e-003 | 8.0000e-005 | 1.7800e-003 | 5.0000e-005 | 1.8200e-003 | 4.9000e-004 | 5.0000e-005 | 5.3000e-004 | | 8.1476 | 8.1476 | 3.4000e-004 | | 8.1561 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0334** | **0.3719** | **0.2540** | **1.5800e-003** | **0.0945** | **1.0000e-003** | **0.0955** | **0.0257** | **9.5000e-004** | **0.0266** | | **163.6381** | **163.6381** | **5.4000e-003** | | **163.7732** |

## 3.5 Improvements to check dam - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5609 | 12.9502 | 19.5244 | 0.0341 | | 0.5524 | 0.5524 | | 0.5466 | 0.5466 | | 3,217.2311 | 3,217.2311 | 0.2212 | | 3,222.7608 |
| **Total** | **1.5609** | **12.9502** | **19.5244** | **0.0341** | | **0.5524** | **0.5524** | | **0.5466** | **0.5466** | | **3,217.2311** | **3,217.2311** | **0.2212** | | **3,222.7608** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 6.7000e-004 | 0.0241 | 8.0400e-003 | 1.0000e-004 | 2.3100e-003 | 6.0000e-005 | 2.3700e-003 | 6.3000e-004 | 6.0000e-005 | 6.9000e-004 | | 10.5919 | 10.5919 | 4.4000e-004 | | 10.6030 |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0336** | **0.3775** | **0.2559** | **1.6000e-003** | **0.0950** | **1.0100e-003** | **0.0960** | **0.0258** | **9.6000e-004** | **0.0268** | | **166.0824** | **166.0824** | **5.5000e-003** | | **166.2201** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5609 | 12.9502 | 19.5244 | 0.0341 | | 0.5524 | 0.5524 | | 0.5466 | 0.5466 | 0.0000 | 3,217.2311 | 3,217.2311 | 0.2212 | | 3,222.7608 |
| **Total** | **1.5609** | **12.9502** | **19.5244** | **0.0341** | | **0.5524** | **0.5524** | | **0.5466** | **0.5466** | **0.0000** | **3,217.2311** | **3,217.2311** | **0.2212** | | **3,222.7608** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 6.7000e-004 | 0.0241 | 8.0400e-003 | 1.0000e-004 | 2.3100e-003 | 6.0000e-005 | 2.3700e-003 | 6.3000e-004 | 6.0000e-005 | 6.9000e-004 | | 10.5919 | 10.5919 | 4.4000e-004 | | 10.6030 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0336** | **0.3775** | **0.2559** | **1.6000e-003** | **0.0950** | **1.0100e-003** | **0.0960** | **0.0258** | **9.6000e-004** | **0.0268** | | **166.0824** | **166.0824** | **5.5000e-003** | | **166.2201** |

## 3.6 Fish passage upgrades - 2028

## Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.5736 | 13.6114 | 22.2929 | 0.0377 | | 0.5834 | 0.5834 | | 0.5685 | 0.5685 | | 3,593.8445 | 3,593.8445 | 0.4550 | | 3,605.2190 |
| **Total** | **1.5736** | **13.6114** | **22.2929** | **0.0377** | | **0.5834** | **0.5834** | | **0.5685** | **0.5685** | | **3,593.8445** | **3,593.8445** | **0.4550** | | **3,605.2190** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 7.4000e-004 | 0.0268 | 8.9300e-003 | 1.1000e-004 | 2.5700e-003 | 7.0000e-005 | 2.6400e-003 | 7.0000e-004 | 7.0000e-005 | 7.7000e-004 | | 11.7687 | 11.7687 | 4.9000e-004 | | 11.7811 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0337** | **0.3801** | **0.2568** | **1.6100e-003** | **0.0953** | **1.0200e-003** | **0.0963** | **0.0259** | **9.7000e-004** | **0.0269** | | **167.2592** | **167.2592** | **5.5500e-003** | | **167.3982** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 1.5736 | 13.6114 | 22.2929 | 0.0377 | | 0.5834 | 0.5834 | | 0.5685 | 0.5685 | 0.0000 | 3,593.8445 | 3,593.8445 | 0.4550 | | 3,605.2190 |
| **Total** | **1.5736** | **13.6114** | **22.2929** | **0.0377** | | **0.5834** | **0.5834** | | **0.5685** | **0.5685** | **0.0000** | **3,593.8445** | **3,593.8445** | **0.4550** | | **3,605.2190** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 7.4000e-004 | 0.0268 | 8.9300e-003 | 1.1000e-004 | 2.5700e-003 | 7.0000e-005 | 2.6400e-003 | 7.0000e-004 | 7.0000e-005 | 7.7000e-004 | | 11.7687 | 11.7687 | 4.9000e-004 | | 11.7811 |
| Vendor | 8.6200e-003 | 0.3375 | 0.0916 | 1.0100e-003 | 0.0270 | 5.5000e-004 | 0.0275 | 7.7600e-003 | 5.3000e-004 | 8.2800e-003 | | 107.1227 | 107.1227 | 3.8800e-003 | | 107.2197 |
| Worker | 0.0243 | 0.0159 | 0.1563 | 4.9000e-004 | 0.0657 | 4.0000e-004 | 0.0661 | 0.0174 | 3.7000e-004 | 0.0178 | | 48.3678 | 48.3678 | 1.1800e-003 | | 48.3974 |
| **Total** | **0.0337** | **0.3801** | **0.2568** | **1.6100e-003** | **0.0953** | **1.0200e-003** | **0.0963** | **0.0259** | **9.7000e-004** | **0.0269** | | **167.2592** | **167.2592** | **5.5500e-003** | | **167.3982** |

## 3.7 Site cleanup and testing - 2028

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.1671 | 1.2217 | 3.2594 | 5.1700e-003 | | 0.0599 | 0.0599 | | 0.0551 | 0.0551 | | 500.3379 | 500.3379 | 0.1618 | | 504.3834 |
| **Total** | **0.1671** | **1.2217** | **3.2594** | **5.1700e-003** | | **0.0599** | **0.0599** | | **0.0551** | **0.0551** | | **500.3379** | **500.3379** | **0.1618** | | **504.3834** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 7.7000e-004 | 0.0278 | 9.2800e-003 | 1.1000e-004 | 2.6700e-003 | 7.0000e-005 | 2.7400e-003 | 7.3000e-004 | 7.0000e-005 | 8.0000e-004 | | 12.2214 | 12.2214 | 5.1000e-004 | | 12.2342 |
| Vendor | 6.4700e-003 | 0.2531 | 0.0687 | 7.6000e-004 | 0.0202 | 4.1000e-004 | 0.0206 | 5.8200e-003 | 4.0000e-004 | 6.2100e-003 | | 80.3420 | 80.3420 | 2.9100e-003 | | 80.4148 |
| Worker | 0.0182 | 0.0119 | 0.1172 | 3.6000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 36.2759 | 36.2759 | 8.9000e-004 | | 36.2981 |
| **Total** | **0.0255** | **0.2928** | **0.1952** | **1.2300e-003** | **0.0722** | **7.8000e-004** | **0.0730** | **0.0196** | **7.5000e-004** | **0.0204** | | **128.8393** | **128.8393** | **4.3100e-003** | | **128.9470** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 0.1671 | 1.2217 | 3.2594 | 5.1700e-003 | | 0.0599 | 0.0599 | | 0.0551 | 0.0551 | 0.0000 | 500.3379 | 500.3379 | 0.1618 | | 504.3834 |
| **Total** | **0.1671** | **1.2217** | **3.2594** | **5.1700e-003** | | **0.0599** | **0.0599** | | **0.0551** | **0.0551** | **0.0000** | **500.3379** | **500.3379** | **0.1618** | | **504.3834** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 7.7000e-004 | 0.0278 | 9.2800e-003 | 1.1000e-004 | 2.6700e-003 | 7.0000e-005 | 2.7400e-003 | 7.3000e-004 | 7.0000e-005 | 8.0000e-004 | | 12.2214 | 12.2214 | 5.1000e-004 | | 12.2342 |
| Vendor | 6.4700e-003 | 0.2531 | 0.0687 | 7.6000e-004 | 0.0202 | 4.1000e-004 | 0.0206 | 5.8200e-003 | 4.0000e-004 | 6.2100e-003 | | 80.3420 | 80.3420 | 2.9100e-003 | | 80.4148 |
| Worker | 0.0182 | 0.0119 | 0.1172 | 3.6000e-004 | 0.0493 | 3.0000e-004 | 0.0496 | 0.0131 | 2.8000e-004 | 0.0134 | | 36.2759 | 36.2759 | 8.9000e-004 | | 36.2981 |
| **Total** | **0.0255** | **0.2928** | **0.1952** | **1.2300e-003** | **0.0722** | **7.8000e-004** | **0.0730** | **0.0196** | **7.5000e-004** | **0.0204** | | **128.8393** | **128.8393** | **4.3100e-003** | | **128.9470** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 9.50 | 7.30 | 7.30 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.599608 | 0.024515 | 0.205520 | 0.108091 | 0.013987 | 0.004134 | 0.021227 | 0.013186 | 0.001229 | 0.001862 | 0.004978 | 0.000953 | 0.000710 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| Unmitigated | 0.0428 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0428 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.4000e-004 | 4.4000e-004 | 0.0000 | | 4.7000e-004 |
| **Total** | **0.0428** | **0.0000** | **2.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.4000e-004** | **4.4000e-004** | **0.0000** | | **4.7000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Operational Staff Increase
**Santa Cruz County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 1.00 | 1000sqft | 0.02 | 1,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2026 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Increased staff for Agreed Flows implementation and Other City ASR

Land Use - Modeling on-road vehicles for operations only

Construction Phase - Modeling on-road vehicles for operations only

Off-road Equipment - Modeling on-road vehicles for operations only

Off-road Equipment - Equipment based on City input

Trips and VMT - Modeling on-road vehicles for operations only

Grading - Modeling on-road vehicles for operations only

Architectural Coating - Modeling on-road vehicles for operations only

Vehicle Trips - 3 new staff total for Agreed Flows implementation and Other ASR Facilities, as well as 1 new daily trip for existing staff for Beltz/ASR maintenance

Consumer Products - Modeling on-road vehicles for operations only

Area Coating - Modeling on-road vehicles for operations only

Landscape Equipment - Modeling on-road vehicles for operations only

Energy Use - Modeling on-road vehicles for operations only

Water And Wastewater - Modeling on-road vehicles for operations only

Solid Waste - Modeling on-road vehicles for operations only

Fleet Mix - Light duty trucks assumed for vehicles

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior | 500.00 | 0.00 |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior | 1,500.00 | 0.00 |
| tblAreaCoating | Area_Nonresidential_Exterior | 500 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 1500 | 0 |
| tblConsumerProducts | ROG_EF | 2.14E-05 | 0 |
| tblConsumerProducts | ROG_EF_Degreaser | 3.542E-07 | 0 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblFleetMix | HHD | 0.01 | 0.00 |
| tblFleetMix | LDA | 0.59 | 0.00 |
| tblFleetMix | LDT1 | 0.03 | 0.50 |
| tblFleetMix | LDT2 | 0.21 | 0.50 |
| tblFleetMix | LHD1 | 0.02 | 0.00 |
| tblFleetMix | LHD2 | 4.4270e-003 | 0.00 |
| tblFleetMix | MCY | 5.3020e-003 | 0.00 |
| tblFleetMix | MDV | 0.11 | 0.00 |
| tblFleetMix | MH | 8.5400e-004 | 0.00 |
| tblFleetMix | MHD | 0.02 | 0.00 |
| tblFleetMix | OBUS | 1.2290e-003 | 0.00 |
| tblFleetMix | SBUS | 9.8100e-004 | 0.00 |

| | | | |
|---|---|---|---|
| tblFleetMix | UBUS | 2.2120e-003 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 1.24 | 0.00 |
| tblVehicleTrips | CC_TTP | 28.00 | 0.00 |
| tblVehicleTrips | CNW_TTP | 13.00 | 0.00 |
| tblVehicleTrips | CW_TL | 9.50 | 15.00 |
| tblVehicleTrips | CW_TTP | 59.00 | 100.00 |
| tblVehicleTrips | DV_TP | 5.00 | 0.00 |
| tblVehicleTrips | PB_TP | 3.00 | 0.00 |
| tblVehicleTrips | PR_TP | 92.00 | 100.00 |
| tblVehicleTrips | ST_TR | 1.32 | 8.00 |
| tblVehicleTrips | SU_TR | 0.68 | 8.00 |
| tblVehicleTrips | WD_TR | 6.97 | 8.00 |
| tblWater | IndoorWaterUseRate | 231,250.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2025 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2025 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| **Quarter** | **Start Date** | **End Date** | **Maximum Unmitigated ROG + NOX (tons/quarter)** | **Maximum Mitigated ROG + NOX (tons/quarter)** |
|---|---|---|---|---|
| | | **Highest** | | |

## 2.2 Overall Operational

**<u>Unmitigated Operational</u>**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2.0000e-005 | 2.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 2.8800e-003 | 5.8200e-003 | 0.0531 | 1.5000e-004 | 0.0160 | 1.2000e-004 | 0.0161 | 4.2500e-003 | 1.1000e-004 | 4.3600e-003 | 0.0000 | 13.3422 | 13.3422 | 4.2000e-004 | 0.0000 | 13.3528 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **2.8800e-003** | **5.8200e-003** | **0.0531** | **1.5000e-004** | **0.0160** | **1.2000e-004** | **0.0161** | **4.2500e-003** | **1.1000e-004** | **4.3600e-003** | **0.0000** | **13.3422** | **13.3422** | **4.2000e-004** | **0.0000** | **13.3528** |

**Mitigated Operational**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2.0000e-005 | 2.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 2.8800e-003 | 5.8200e-003 | 0.0531 | 1.5000e-004 | 0.0160 | 1.2000e-004 | 0.0161 | 4.2500e-003 | 1.1000e-004 | 4.3600e-003 | 0.0000 | 13.3422 | 13.3422 | 4.2000e-004 | 0.0000 | 13.3528 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **2.8800e-003** | **5.8200e-003** | **0.0531** | **1.5000e-004** | **0.0160** | **1.2000e-004** | **0.0161** | **4.2500e-003** | **1.1000e-004** | **4.3600e-003** | **0.0000** | **13.3422** | **13.3422** | **4.2000e-004** | **0.0000** | **13.3528** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Architectural coatings | Architectural Coating | 1/6/2025 | 1/10/2025 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Architectural coatings | Air Compressors | 0 | 6.00 | 78 | 0.48 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural coatings | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Architectural coatings - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 4.0 Operational Detail - Mobile

## 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 2.8800e-003 | 5.8200e-003 | 0.0531 | 1.5000e-004 | 0.0160 | 1.2000e-004 | 0.0161 | 4.2500e-003 | 1.1000e-004 | 4.3600e-003 | 0.0000 | 13.3422 | 13.3422 | 4.2000e-004 | 0.0000 | 13.3528 |
| Unmitigated | 2.8800e-003 | 5.8200e-003 | 0.0531 | 1.5000e-004 | 0.0160 | 1.2000e-004 | 0.0161 | 4.2500e-003 | 1.1000e-004 | 4.3600e-003 | 0.0000 | 13.3422 | 13.3422 | 4.2000e-004 | 0.0000 | 13.3528 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 8.00 | 8.00 | 8.00 | 43,680 | 43,680 |
| Total | 8.00 | 8.00 | 8.00 | 43,680 | 43,680 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 15.00 | 7.30 | 7.30 | 100.00 | 0.00 | 0.00 | 100 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.000000 | 0.500000 | 0.500000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2.0000e-005 | 2.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |
| Unmitigated | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2.0000e-005 | 2.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |

### 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2.0000e-005 | 2.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |
| **Total** | **0.0000** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **3.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 1.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 2.0000e-005 | 2.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |
| **Total** | **0.0000** | **0.0000** | **1.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **2.0000e-005** | **2.0000e-005** | **0.0000** | **0.0000** | **3.0000e-005** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|

| Land Use | Mgal | MT/yr | | | |
|---|---|---|---|---|---|
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| General Light Industry | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# SCWR - Operational Staff Increase
**Santa Cruz County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 1.00 | 1000sqft | 0.02 | 1,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2026 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Increased staff for Agreed Flows implementation and Other City ASR

Land Use - Modeling on-road vehicles for operations only

Construction Phase - Modeling on-road vehicles for operations only

Off-road Equipment - Modeling on-road vehicles for operations only

Off-road Equipment - Equipment based on City input

Trips and VMT - Modeling on-road vehicles for operations only

Grading - Modeling on-road vehicles for operations only

Architectural Coating - Modeling on-road vehicles for operations only

Vehicle Trips - 3 new staff total for Agreed Flows implementation and Other ASR Facilities, as well as 1 new daily trip for existing staff for Beltz/ASR maintenance

Consumer Products - Modeling on-road vehicles for operations only

Area Coating - Modeling on-road vehicles for operations only

Landscape Equipment - Modeling on-road vehicles for operations only

Energy Use - Modeling on-road vehicles for operations only

Water And Wastewater - Modeling on-road vehicles for operations only

Solid Waste - Modeling on-road vehicles for operations only

Fleet Mix - Light duty trucks assumed for vehicles

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior | 500.00 | 0.00 |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior | 1,500.00 | 0.00 |
| tblAreaCoating | Area_Nonresidential_Exterior | 500 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 1500 | 0 |
| tblConsumerProducts | ROG_EF | 2.14E-05 | 0 |
| tblConsumerProducts | ROG_EF_Degreaser | 3.542E-07 | 0 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblFleetMix | HHD | 0.01 | 0.00 |
| tblFleetMix | LDA | 0.59 | 0.00 |
| tblFleetMix | LDT1 | 0.03 | 0.50 |
| tblFleetMix | LDT2 | 0.21 | 0.50 |
| tblFleetMix | LHD1 | 0.02 | 0.00 |
| tblFleetMix | LHD2 | 4.4270e-003 | 0.00 |
| tblFleetMix | MCY | 5.3020e-003 | 0.00 |
| tblFleetMix | MDV | 0.11 | 0.00 |
| tblFleetMix | MH | 8.5400e-004 | 0.00 |
| tblFleetMix | MHD | 0.02 | 0.00 |
| tblFleetMix | OBUS | 1.2290e-003 | 0.00 |
| tblFleetMix | SBUS | 9.8100e-004 | 0.00 |

| | | | |
|---|---|---|---|
| tblFleetMix | UBUS | 2.2120e-003 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 1.24 | 0.00 |
| tblVehicleTrips | CC_TTP | 28.00 | 0.00 |
| tblVehicleTrips | CNW_TTP | 13.00 | 0.00 |
| tblVehicleTrips | CW_TL | 9.50 | 15.00 |
| tblVehicleTrips | CW_TTP | 59.00 | 100.00 |
| tblVehicleTrips | DV_TP | 5.00 | 0.00 |
| tblVehicleTrips | PB_TP | 3.00 | 0.00 |
| tblVehicleTrips | PR_TP | 92.00 | 100.00 |
| tblVehicleTrips | ST_TR | 1.32 | 8.00 |
| tblVehicleTrips | SU_TR | 0.68 | 8.00 |
| tblVehicleTrips | WD_TR | 6.97 | 8.00 |
| tblWater | IndoorWaterUseRate | 231,250.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2025 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2025 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0175 | 0.0280 | 0.3059 | 8.5000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 84.8242 | 84.8242 | 2.6900e-003 | | 84.8914 |
| **Total** | **0.0175** | **0.0280** | **0.3060** | **8.5000e-004** | **0.0912** | **6.6000e-004** | **0.0918** | **0.0242** | **6.1000e-004** | **0.0248** | | **84.8244** | **84.8244** | **2.6900e-003** | **0.0000** | **84.8917** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0175 | 0.0280 | 0.3059 | 8.5000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 84.8242 | 84.8242 | 2.6900e-003 | | 84.8914 |
| **Total** | **0.0175** | **0.0280** | **0.3060** | **8.5000e-004** | **0.0912** | **6.6000e-004** | **0.0918** | **0.0242** | **6.1000e-004** | **0.0248** | | **84.8244** | **84.8244** | **2.6900e-003** | **0.0000** | **84.8917** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Architectural coatings | Architectural Coating | 1/6/2025 | 1/10/2025 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Architectural coatings | Air Compressors | 0 | 6.00 | 78 | 0.48 |

### Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural coatings | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Architectural coatings - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Mitigated Construction On-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Mitigated Construction Off-Site**

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0175 | 0.0280 | 0.3059 | 8.5000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 84.8242 | 84.8242 | 2.6900e-003 | | 84.8914 |
| Unmitigated | 0.0175 | 0.0280 | 0.3059 | 8.5000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 84.8242 | 84.8242 | 2.6900e-003 | | 84.8914 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 8.00 | 8.00 | 8.00 | 43,680 | 43,680 |
| Total | 8.00 | 8.00 | 8.00 | 43,680 | 43,680 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 15.00 | 7.30 | 7.30 | 100.00 | 0.00 | 0.00 | 100 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.000000 | 0.500000 | 0.500000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | lb/day | | | | | | | | | | lb/day | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| Unmitigated | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| **Total** | **1.0000e-005** | **0.0000** | **1.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.2000e-004** | **2.2000e-004** | **0.0000** | | **2.3000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| **Total** | **1.0000e-005** | **0.0000** | **1.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.2000e-004** | **2.2000e-004** | **0.0000** | | **2.3000e-004** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

# 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

# 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

# 11.0 Vegetation

# SCWR - Operational Staff Increase

**Santa Cruz County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 1.00 | 1000sqft | 0.02 | 1,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 1.8 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 5 | | | **Operational Year** | 2026 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - Increased staff for Agreed Flows implementation and Other City ASR

Land Use - Modeling on-road vehicles for operations only

Construction Phase - Modeling on-road vehicles for operations only

Off-road Equipment - Modeling on-road vehicles for operations only

Off-road Equipment - Equipment based on City input

Trips and VMT - Modeling on-road vehicles for operations only

Grading - Modeling on-road vehicles for operations only

Architectural Coating - Modeling on-road vehicles for operations only

Vehicle Trips - 3 new staff total for Agreed Flows implementation and Other ASR Facilities, as well as 1 new daily trip for existing staff for Beltz/ASR maintenance

Consumer Products - Modeling on-road vehicles for operations only

Area Coating - Modeling on-road vehicles for operations only

Landscape Equipment - Modeling on-road vehicles for operations only

Energy Use - Modeling on-road vehicles for operations only

Water And Wastewater - Modeling on-road vehicles for operations only

Solid Waste - Modeling on-road vehicles for operations only

Fleet Mix - Light duty trucks assumed for vehicles

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior | 500.00 | 0.00 |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior | 1,500.00 | 0.00 |
| tblAreaCoating | Area_Nonresidential_Exterior | 500 | 0 |
| tblAreaCoating | Area_Nonresidential_Interior | 1500 | 0 |
| tblConsumerProducts | ROG_EF | 2.14E-05 | 0 |
| tblConsumerProducts | ROG_EF_Degreaser | 3.542E-07 | 0 |
| tblEnergyUse | LightingElect | 2.99 | 0.00 |
| tblEnergyUse | NT24E | 3.36 | 0.00 |
| tblEnergyUse | NT24NG | 6.90 | 0.00 |
| tblEnergyUse | T24E | 1.21 | 0.00 |
| tblEnergyUse | T24NG | 17.85 | 0.00 |
| tblFleetMix | HHD | 0.01 | 0.00 |
| tblFleetMix | LDA | 0.59 | 0.00 |
| tblFleetMix | LDT1 | 0.03 | 0.50 |
| tblFleetMix | LDT2 | 0.21 | 0.50 |
| tblFleetMix | LHD1 | 0.02 | 0.00 |
| tblFleetMix | LHD2 | 4.4270e-003 | 0.00 |
| tblFleetMix | MCY | 5.3020e-003 | 0.00 |
| tblFleetMix | MDV | 0.11 | 0.00 |
| tblFleetMix | MH | 8.5400e-004 | 0.00 |
| tblFleetMix | MHD | 0.02 | 0.00 |
| tblFleetMix | OBUS | 1.2290e-003 | 0.00 |
| tblFleetMix | SBUS | 9.8100e-004 | 0.00 |

| | | | |
|---|---|---|---|
| tblFleetMix | UBUS | 2.2120e-003 | 0.00 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00 | 0.00 |
| tblSolidWaste | SolidWasteGenerationRate | 1.24 | 0.00 |
| tblVehicleTrips | CC_TTP | 28.00 | 0.00 |
| tblVehicleTrips | CNW_TTP | 13.00 | 0.00 |
| tblVehicleTrips | CW_TL | 9.50 | 15.00 |
| tblVehicleTrips | CW_TTP | 59.00 | 100.00 |
| tblVehicleTrips | DV_TP | 5.00 | 0.00 |
| tblVehicleTrips | PB_TP | 3.00 | 0.00 |
| tblVehicleTrips | PR_TP | 92.00 | 100.00 |
| tblVehicleTrips | ST_TR | 1.32 | 8.00 |
| tblVehicleTrips | SU_TR | 0.68 | 8.00 |
| tblVehicleTrips | WD_TR | 6.97 | 8.00 |
| tblWater | IndoorWaterUseRate | 231,250.00 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2025 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2025 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Maximum** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0157 | 0.0350 | 0.3022 | 8.1000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 80.8377 | 80.8377 | 2.5600e-003 | | 80.9018 |
| **Total** | **0.0157** | **0.0350** | **0.3023** | **8.1000e-004** | **0.0912** | **6.6000e-004** | **0.0918** | **0.0242** | **6.1000e-004** | **0.0248** | | **80.8379** | **80.8379** | **2.5600e-003** | **0.0000** | **80.9020** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0157 | 0.0350 | 0.3022 | 8.1000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 80.8377 | 80.8377 | 2.5600e-003 | | 80.9018 |
| **Total** | **0.0157** | **0.0350** | **0.3023** | **8.1000e-004** | **0.0912** | **6.6000e-004** | **0.0918** | **0.0242** | **6.1000e-004** | **0.0248** | | **80.8379** | **80.8379** | **2.5600e-003** | **0.0000** | **80.9020** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Architectural coatings | Architectural Coating | 1/6/2025 | 1/10/2025 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Architectural coatings | Air Compressors | 0 | 6.00 | 78 | 0.48 |

### Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural coatings | | 0 | 0.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Architectural coatings - 2025

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | | **0.0000** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0157 | 0.0350 | 0.3022 | 8.1000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 80.8377 | 80.8377 | 2.5600e-003 | | 80.9018 |
| Unmitigated | 0.0157 | 0.0350 | 0.3022 | 8.1000e-004 | 0.0912 | 6.6000e-004 | 0.0918 | 0.0242 | 6.1000e-004 | 0.0248 | | 80.8377 | 80.8377 | 2.5600e-003 | | 80.9018 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 8.00 | 8.00 | 8.00 | 43,680 | 43,680 |
| Total | 8.00 | 8.00 | 8.00 | 43,680 | 43,680 |

## 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C- | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| General Light Industry | 15.00 | 7.30 | 7.30 | 100.00 | 0.00 | 0.00 | 100 | 0 | 0 |

## 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 0.000000 | 0.500000 | 0.500000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |

# 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

| Category | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| Unmitigated | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| SubCategory | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| **Total** | **1.0000e-005** | **0.0000** | **1.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.2000e-004** | **2.2000e-004** | **0.0000** | | **2.3000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.0000e-005 | 0.0000 | 1.0000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 2.2000e-004 | 2.2000e-004 | 0.0000 | | 2.3000e-004 |
| **Total** | **1.0000e-005** | **0.0000** | **1.0000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **2.2000e-004** | **2.2000e-004** | **0.0000** | | **2.3000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

**Fire Pumps and Emergency Generators**

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

**User Defined Equipment**

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

**Santa Cruz Water Rights Project - Indirect GHG Emissions from Electricity Use (Power Plant Emissions)**

Increased Annual Electrical Use: 1,326,350 kWh (kilowatt hours)/year annual average
1,326 mWh (megawatt hours)/year

| Indirect GHG gases | Emission Factor lb/mWh | Annual Project Electricity mWh | Annual GHGs metric tons | CO2 Equivalent Factor | Annual CO2 Equivalent Emissions (metric tons) |
|---|---|---|---|---|---|
| Carbon Dioxide (CO2) | 210 | 1,326 | 126.34 | 1 | 126.34 |
| Nitrous Oxide (N2O) | 0.00617 | 1,326 | 0.0037 | 298 | 1.11 |
| Methane (CH4) | 0.029 | 1,326 | 0.0174 | 25 | 0.44 |
| **Total Indirect GHG Emissions from Operations Increased Electricity Use=** | | | | | **127.88** |

1. Emission factors for CO2, CH4, and N2O are from the CalEEMod software version 2016.3.2 for PG&E. CO2 was adjusted based PG&E's reported intensity for 2017 which is from the PG&E Corporate Responsibility and Sustainability Report (2019).

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# Appendix F

## Special-Status Species Potentially Occurring within the Biological Study Area

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## TABLES

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## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Agrostis blasdalei* | Blasdale's bent grass | None/None/1B.2 | Coastal bluff scrub, Coastal dunes, Coastal prairie/ perennial rhizomatous herb/ May–July/0–490 | **Moderate potential to occur.** The biological study area supports suitable coastal bluff habitat for this species. | **Not expected to occur.** Suitable coastal bluff habitat for this species is absent from the infrastructure study area. |
| *Amsinckia lunaris* | bent-flowered fiddleneck | None/None/1B.2 | Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland/annual herb/Mar–June/5–1,640 | **Moderate potential to occur.** Although the biological study area supports suitable steep-sloped grassland habitat, there are only a few CNDDB occurrences along the shore of North Coast and Swanton/Scott Creek watersheds (CDFW 2020). | **Low potential to occur.** Marginally suitable grassland habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. Any suitable habitat that may have been present in the remaining infrastructure study area has been eliminated by intensive human use. The closest CNDDB occurrence was documented approximately 2.5 miles northeast of the City/SVWD intertie site in 1990 (CDFW 2020; No. 1). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Arctostaphylos andersonii* | Anderson's manzanita | None/None/1B.2 | Broadleafed upland forest, Chaparral, North Coast coniferous forest; openings, edges/perennial evergreen shrub/Nov–May/195–2,490 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists 58 occurrences throughout the Santa Cruz Mountains (CDFW 2020). | **Low potential to occur.** Marginally suitable forest, woodland, and/or scrub habitat is present within the new ASR facilities sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The remainder of the infrastructure study area is located below the elevational range of the species. The closest CNDDB occurrence was documented approximately two miles northwest of the SqCWD/CWD intertie south in 1980 (CDFW 2020; No. 46). |
| *Arctostaphylos silvicola* | Bonny Doon manzanita | None/None/1B.2 | Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest; endemic found locally on Santa Margarita sandstone in Sandhills; inland marine sands/perennial evergreen shrub/Jan–Mar/390–1,965 | **High potential to occur.** The biological study area supports suitable habitat for this species. The CNDDB lists 16 occurrences of this species, several of them within the vicinity of Felton/Scotts Valley. | **High potential to occur.** Suitable forest and shrub habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The remainder of the infrastructure study area is outside of the elevational range of this species. The closest CNDDB occurrence was documented within chaparral/sandhill habitat approximately 0.5-mile west of the City/SVWD intertie site in 2014 (CDFW 2020; No. 1). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Arenaria paludicola* | marsh sandwort | FE/SE/1B.1 | Marshes and swamps (freshwater or brackish); sandy, openings/perennial stoloniferous herb/May–Aug/ 5–560 | **High potential to occur.** The biological study area supports suitable habitat for this species in Wilder State Park, where this species was introduced back into native habitat in 2013 (CDFW 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Calyptridium parryi* var. *hesseae* | Santa Cruz Mountains pussypaws | None/None/1B.1 | Chaparral, Cismontane woodland; sandy or gravelly, openings/annual herb/ May–Aug/1,000–5,015 | **High potential to occur.** The biological study area supports suitable habitat for this species. | **Not expected to occur.** The infrastructure study area is below the elevational range of this species. |
| *Campanula californica* | swamp harebell | None/None/1B.2 | Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Meadows and seeps, Marshes and swamps (freshwater), North Coast coniferous forest; mesic/ perennial rhizomatous herb/ June–Oct/0–1,325 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species, however, only one historic occurrence of this species was documented within the biological study area. | **Not expected to occur.** The infrastructure study area does not support suitable habitat. The only CNDDB occurrence was documented in a bog near Camp Evers within the City/SVWD intertie site in 1944. This occurrence has since been extirpated (CDFW 2020; No. 1). |
| *Carex comosa* | bristly sedge | None/None/2B.1 | Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland/ perennial rhizomatous herb/ May–Sep/0–2,050 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. However, only one historic occurrence of this species was documented within the biological study area. | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. The only CNDDB occurrence of this species was mapped to a bog in the Forest of Nisene Marks State Park in 1994, approximately eight miles east of the City/SVWD Intertie (CDFW 2020; No. 2) |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Carex saliniformis* | deceiving sedge | None/None/1B.2 | Coastal prairie, Coastal scrub, Meadows and seeps, Marshes and swamps (coastal salt); mesic/perennial rhizomatous herb/June(July)/5–755 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species, although modern and historical CNDDB occurrences are scarce. | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. The only CNDDB occurrence was documented in a bog near the City/SVWD intertie site (Camp Evers) in 1944. This occurrence has since been extirpated (CDFW 2020; No. 1). |
| *Chorizanthe pungens* var. *hartwegiana* | Ben Lomond spineflower | FE/None/1B.1 | Lower montane coniferous forest (maritime ponderosa pine sandhills)/annual herb/ Apr–July/295–2,000 | **High potential to occur.** The biological study area supports suitable habitat for this species, and the CNDDB lists several occurrences within the vicinity of Felton/Scotts Valley/Ben Lomond (CDFW 2020). This sandhills endemic species is restricted to the Zayante soils near the towns of Ben Lomond, Olympia, Scotts Valley, Felton, Bonny Doon, Zayante, and Boulder Creek (Ebbin, Moser + Skaggs LLP et al. 2021). Additionally, this species is known to occur at the Bonny Doon mitigation site (Ebbin, Moser + Skaggs LLP and Entomological Consulting Services, Ltd. 2013). | **Moderate potential to occur.** Suitable sandhills and Zayante soils are present within the new ASR facility sites and City/SVWD intertie site. The remaining infrastructure study area lacks suitable habitat for this species. The closest CNDDB occurrence was documented approximately 1.5 miles west of the City/SVWD intertie site in 1988 (CDFW 2020; No. 3). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Chorizanthe pungens* var. *pungens* | Monterey spineflower | FT/None/1B.2 | Chaparral (maritime), Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland; sandy/ annual herb/Apr–June(July–Aug)/5–1,475 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists several occurrences within the vicinity of Aptos (CDFW 2020). | **Moderate potential to occur.** Marginally suitable to suitable scrub, woodland, and grassland habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. Potentially suitable habitat within the remaining infrastructure study area has been eliminated by intensive human use. Although there are a couple CNDDB occurrences for this species within a mile of the City/SqCWD/CWD intertie site, they are from 2006 and may no longer be present (CDFW 2020). |
| *Chorizanthe robusta* var. *hartwegii* | Scotts Valley spineflower | FE/None/1B.1 | Meadows and seeps (sandy), Valley and foothill grassland (mudstone and Purisima outcrops)/annual herb/Apr-July/330–750 | **High potential to occur.** The biological study area supports suitable habitat for this species. Three modern CNDDB occurrences have been documented in the vicinity of Scotts Valley (CDFW 2020). | **High potential to occur.** Suitable grassland habitat is present within the new ASR facility sites and City/SVWD intertie site. The remainder of the infrastructure study area lacks suitable habitat and/or is below the elevational range of this species. Modern occurrences of this species are limited to mudstone outcroppings approximately two miles northeast of the City/SVWD intertie site (CDFW 2020; No. 1-3). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Chorizanthe robusta* var. *robusta* | robust spineflower | FE/None/1B.1 | Chaparral (maritime), Cismontane woodland (openings), Coastal dunes, Coastal scrub; sandy or gravelly/annual herb/Apr–Sep/5–985 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists 20 occurrences within the region (CDFW 2020). Three populations are located on sandy soils of coastal and near coastal habitats at Pogonip Park, Branciforte, and north of Wilder Ranch State Park (Ebbin, Moser + Skaggs LLP et al. 2021). | **Moderate potential to occur.** Moderately suitable woodland and coastal scrub habitats are present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. Potentially suitable habitat within the remainder of the infrastructure study area has been eliminated by intensive human use. The closest CNDDB occurrence was documented approximately 0.3-mile northeast of the City/SqCWD/CWD intertie site (CDFW 2020; No. 16). |
| *Dacryophyllum falcifolium* | tear drop moss | None/None/1B.3 | North Coast coniferous forest; carbonate/moss/N.A./ 160–900 | **High potential to occur.** The biological study area supports suitable habitat for this species. | **Low potential to occur.** Marginally suitable forest habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The remainder of the infrastructure study area is below the elevational range of the species. The closest CNDDB occurrence was documented approximately 1.5 miles west of the Felton Diversion site in 2013 (CDFW 2020; No. 7). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Eriogonum nudum* var. *decurrens* | Ben Lomond buckwheat | None/None/1B.1 | Chaparral, Cismontane woodland, Lower montane coniferous forest (maritime ponderosa pine sandhills); sandy/perennial herb/ June–Oct/160–2,620 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists nine occurrences in the vicinity of Felton, Scotts Valley, and Ben Lomond. | **High potential to occur.** Marginally suitable to suitable scrub, woodland, forest and/or ponderosa pine sandhill habitat is present within the new ASR facility sites and City/SVWD intertie site. Suitable sandhill soils are absent from the remainder of the infrastructure study area. The closest CNDDB occurrence was documented near the Felton Diversion site in 1981 (CDFW 2020; No. 8). |
| *Erysimum teretifolium* | Santa Cruz wallflower | FE/SE/1B.1 | Chaparral, Lower montane coniferous forest; inland marine sands/perennial herb/ Mar–July/390–2,000 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists 15 occurrences within the vicinity of Felton/Scotts Valley (CDFW 2020). | **High potential to occur.** This species was documented south of the Mt. Hermon Road exit along La Madrona Road in 1995 (CDFW 2020, No. 29) and suitable coniferous forest habitat is present within the new ASR facility sites and City/SVWD intertie site. The remainder of the infrastructure study area is below the elevational range of the species. |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Fissidens pauperculus* | minute pocket moss | None/None/1B.2 | North Coast coniferous forest (damp coastal soil)/moss/ N.A./30–3,355 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists two occurrences within Santa Cruz County (CDFW 2020). | **Low potential to occur.** Marginally suitable forest habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The remainder of the infrastructure study area lacks suitable habitat for this species. The closest CNDDB occurrence was documented approximately two miles south of the Felton Diversion site in 2001 (CDFW 2020; No.11). |
| *Grimmia torenii* | Toren's grimmia | None/None/1B.3 | Chaparral, Cismontane woodland, Lower montane coniferous forest; Openings, rocky, boulder and rock walls, carbonate, volcanic/moss/ N.A./1,065–3,805 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. The CNDDB only lists one occurrence documented within the northernmost limits of the biological study area in 2008 (CDFW 2020; No. 3). | **Not expected to occur.** The infrastructure study area is outside of the elevational range of this species. |
| *Grimmia vaginulata* | vaginulate grimmia | None/None/1B.1 | Chaparral (openings); Rocky, boulder and rock walls, carbonate/moss/N.A./ 2,245–2,245 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. The CNDDB only lists one occurrence documented within the northernmost limits of the biological study area in 2008 (CDFW 2020; No. 1). | **Not expected to occur.** The infrastructure study area is outside of the elevational range of this species. |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Hesperocyparis abramsiana* var. *abramsiana* | Santa Cruz cypress | FT/SE/1B.2 | Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest; sandstone or granitic/perennial evergreen tree/N.A./915–2,620 | **High potential to occur.** The biological study area supports suitable habitat for this species, and the CNDDB lists nine occurrences within the vicinity of Boulder Creek to Felton (CDFW 2020). | **Not expected to occur.** The infrastructure study area is outside of the elevational range of this species. One occurrence of this species was documented within the CNDDB near Mount Hermon from 1940 (CDFW 2020; No. 13). Modern occurrences are absent from the infrastructure study area. |
| *Holocarpha macradenia* | Santa Cruz tarplant | FT/SE/1B.1 | Coastal prairie, Coastal scrub, Valley and foothill grassland; often clay, sandy/annual herb/ June–Oct/30–720 | **High potential to occur.** The biological study area supports suitable coastal grasslands and prairies for this species, and the CNDDB lists 17 occurrences documented in the vicinity of Santa Cruz and Aptos (CDFW 2020). | **High potential to occur.** Marginally suitable to suitable grassland habitat is located within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. Potentially suitable habitat within the remaining infrastructure study area has been eliminated by intensive human use. The closest CNDDB occurrence was documented near the Beltz Well system in 1986, but has since been extirpated by urban development (CDFW 2020; No. 3). Several populations of this species occur on marine terraces of Arana Gulch and Twin Lakes, near Watsonville, and along Graham Hill Road (Ebbin, Moser + Skaggs LLP et al. 2021). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Horkelia cuneata* var. *sericea* | Kellogg's horkelia | None/None/1B.1 | Closed-cone coniferous forest, Chaparral (maritime), Coastal dunes, Coastal scrub; sandy or gravelly, openings/perennial herb/Apr–Sep/30–655 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species, although only historic CNDDB occurrences occur within the biological study area (CDFW 2020). | **Low potential to occur.** Marginally suitable to suitable scrub habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. However, modern CNDDB occurrences of this species are absent from the infrastructure study area. |
| *Horkelia marinensis* | Point Reyes horkelia | None/None/1B.2 | Coastal dunes, Coastal prairie, Coastal scrub; sandy/perennial herb/May–Sep/15–2,475 | **High potential to occur.** The biological study area supports suitable habitat for this species. The CNDDB lists two occurrences in the vicinity of UC Santa Cruz campus (CDFW 2020). | **Low potential to occur.** Marginally suitable to suitable scrub habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. However, CNDDB occurrences are absent from the infrastructure study area. |
| *Lasthenia californica* ssp. *macrantha* | perennial goldfields | None/None/1B.2 | Coastal bluff scrub, Coastal dunes, Coastal scrub/ perennial herb/Jan–Nov/ 15–1,705 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. However, the CNDDB documents only one historic occurrence of this species within Seacliff State Park (CDFW 2020; No. 42). | **Low potential to occur.** Marginally suitable to suitable scrub habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. However, the infrastructure study area is outside of the historic distribution of this species which is limited to Seacliff State Park. |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Malacothamnus arcuatus* | arcuate bush-mallow | None/None/1B.2 | Chaparral, Cismontane woodland/perennial evergreen shrub/Apr–Sep/45–1,160 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. However, CNDDB occurrences are limited to the northern and easternmost limits of Santa Cruz County (CDFW 2020). | **Not expected to occur.** The infrastructure study area is outside of known distribution of this species. |
| *Microseris paludosa* | marsh microseris | None/None/1B.2 | Closed-cone coniferous forest, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial herb/ Apr–June(July)/15–1,160 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. However, the three CNDDB occurrences within Santa Cruz County are historic and/or lack specific locational information (CDFW 2020). | **Moderate potential to occur.** Marginally suitable to suitable scrub, woodland and/or grassland habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The closest CNDDB occurrence was documented approximately 0.7-mile north of the Tait Diversion site in 1957 (CDFW 2020; No. 7). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Monardella sinuata* ssp. *nigrescens* | northern curly-leaved monardella | None/None/1B.2 | Chaparral (SCR Co.), Coastal dunes, Coastal scrub, Lower montane coniferous forest (SCR Co., ponderosa pine sandhills); Sandy/annual herb/ (Apr)May–July(Aug–Sep)/ 0–985 | **High potential to occur.** The biological study area supports suitable habitat for this species | **High potential to occur.** Marginally suitable to suitable scrub, woodland, grassland, and/or Ponderosa pine sandhill habitat is present within the new ASR facility sites and City/SVWD intertie site. Suitable sandhill soils are absent from the remainder of the infrastructure study area. The closest CNDDB occurrence was documented immediately to the north of the City/SVWD intertie site in 1938 (CDFW 2020; No. 7). |
| *Monolopia gracilens* | woodland woolythreads | None/None/1B.2 | Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland; Serpentine/annual herb/ (Feb)Mar–July/325–3,935 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists 31 occurrences throughout Santa Cruz County (CDFW 2020). | **High potential to occur.** Marginally suitable to suitable woodland, forest, and/or grassland habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The rest of the infrastructure study area is located outside of the elevational range of the species. The closest CNDDB occurrences were mapped near the Tait Diversion in 1935 and Felton Diversion site in 1930 (CDFW 2020; No. 10 and 19). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Orthotrichum kellmanii* | Kellman's bristle moss | None/None/1B.2 | Chaparral, Cismontane woodland; sandstone, carbonate/moss/Jan–Feb/ 1,125–2,245 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species, although CNDDB occurrences are absent. | **Not expected to occur.** The infrastructure study area is outside of the elevational range of this species. |
| *Penstemon rattanii* var. *kleei* | Santa Cruz Mountains beardtongue | None/None/1B.2 | Chaparral, Lower montane coniferous forest, North Coast coniferous forest/perennial herb/May–June/1,310–3,605 | **High potential to occur.** The biological study area supports suitable habitat for this species. One occurrence for this species is documented within the CNDDB at the western boundary of the biological study area from 2019 (CDFW 2020; 4). | **Not expected to occur.** The infrastructure study area is below the elevational range of this species. |
| *Pinus radiata* | Monterey pine | None/None/1B.1 | Closed-cone coniferous forest, Cismontane woodland/ perennial evergreen tree/N.A./ 80–605 | **Moderate potential to occur.** The current range of this species is limited to three stands, the northernmost of which is located east of point Año Nuevo, outside of the biological study area. However, this population appears to be expanding to the south (CDFW 2020; No. 5), and this species was documented within the biological study area in 2017 (Calflora 2020; cbo69316). | **Not expected to occur.** The infrastructure study area is outside of the known distribution of this species. |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Piperia candida* | white-flowered rein orchid | None/None/1B.2 | Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest; sometimes serpentinite/perennial herb/ (Mar)May–Sep/95–4,295 | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. However, the only CNDDB occurrence within the biological study area is historic (CDFW 2020; No. 4). | **Moderate potential to occur.** Suitable forest habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The remainder of the infrastructure study area lacks suitable habitat and/or is below or at the lower elevational limit of the species. Modern occurrences of this species are absent. |
| *Plagiobothrys chorisianus* var. *chorisianus* | Choris' popcornflower | None/None/1B.2 | Chaparral, Coastal prairie, Coastal scrub; mesic/annual herb/Mar–June/5–525 | **High potential to occur.** The biological study area supports suitable habitat for this species, and the CNDDB lists several occurrences, modern and historic, within wetlands from Boulder Creek to Scotts Valley (CDFW 2020). | **Low potential to occur.** Marginally suitable habitat may be present within the new ASR facility sites or City/SVWD intertie site, but is unlikely in the area where improvements would occur. The closest CNDDB occurrence was documented within a vernal swale approximately 0.2-mile north of the City/SVWD intertie site (CDFW 2020; No. 2). |

### Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Plagiobothrys diffusus* | San Francisco popcornflower | None/SE/1B.1 | Coastal prairie, Valley and foothill grassland/annual herb/ Mar–June/195–1,180 | **High potential to occur.** The biological study area supports suitable coastal prairie habitat for this species, and the CNDDB lists 12 occurrences, modern and historic, within the vicinity of Santa Cruz (CDFW 2020). Populations of this species occur at UC Santa Cruz Marshall Field, near Wilder Ranch State Park, Moore Creek Preserve, and Pogonip (Ebbin, Moser + Skaggs LLP et al. 2021). | **Low potential to occur.** Marginally suitable to suitable grassland habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The remainder of the infrastructure study area is below the elevational range of this species. The closest CNDDB occurrence was documented approximately one mile north of the Tait Diversion site in 2010 (CDFW 2020; No. 10). |
| *Polygonum hickmanii* | Scotts Valley polygonum | FE/SE/1B.1 | Valley and foothill grassland (mudstone and sandstone)/ annual herb/May–Aug/ 685–820 | **High potential to occur.** The biological study area supports suitable habitat for this species. This species is endemic to Santa Cruz County. | **Moderate potential to occur.** Suitable grassland habitat is present within and adjacent to the new ASR facility sites and City/SVWD intertie sites. The remainder of the infrastructure study area is located outside of the elevational range of the species. CNDDB occurrences of this species are limited to mudstone soils located approximately three miles northeast of the City/SVWD intertie site (CDFW 2020; No.1 and 2). |

## Table F-1. Special-Status Plant Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State/ CRPR | Primary Habitat Associations/ Life Form/Blooming Period/ Elevation Range (feet amsl) | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Trifolium buckwestiorum* | Santa Cruz clover | None/None/1B.1 | Broadleafed upland forest, Cismontane woodland, Coastal prairie; gravelly, margins/ annual herb/Apr–Oct/ 340–2,000 | **High potential to occur.** The biological study area supports suitable habitat for this species and the CNDDB lists several occurrences from the vicinity of Boulder Creek down to Santa Cruz (CDFW 2020). | **High potential to occur.** Marginally suitable to suitable woodland and/or forest habitat is present within the new ASR facility sites, City/SVWD intertie site, and City/SqCWD/CWD intertie site. The remainder of the infrastructure study area is located outside of the elevational range of the species. The closest CNDDB occurrence was documented 0.7-mile north of the City/SqWCD intertie site in 1995 (CDFW 2020; No. 14). |
| *Trifolium polyodon* | Pacific Grove clover | None/SR/1B.1 | Closed-cone coniferous forest, Coastal prairie, Meadows and seeps, Valley and foothill grassland; mesic, sometimes granitic/annual herb/ Apr–June(July)/15–1,390 | **High potential to occur.** The biological study supports suitable habitat for this species. The CNDDB lists two modern occurrences of this species within wet meadows (CDFW 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat. The closest CNDDB occurrence was documented approximately two miles south of the Felton Diversion site in 2017 (CDFW 2020; No. 21), but similar habitat (i.e., wet depression in coastal prairie) is absent from the infrastructure study area. |

**Notes:** amsl = above mean sea level; CNDDB = California Natural Diversity Database; CWD = Central Water District; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District.

**Status Legend**
**Federal**
FE: Federally listed as endangered
FT: Federally listed as threatened
FC: Federal candidate for listing as threatened or endangered
**State**
SE: State listed as endangered
ST: State listed as threatened
SR: State listed as rare
**CRPR (California Rare Plant Rank)**
CRPR 1A: Plants presumed extinct in California and either rare or extinct elsewhere
CRPR List 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR List 2A: Plants rare, threatened, or endangered in California but common elsewhere
CRPR List 2B: Plants rare, threatened, or endangered in California but more common elsewhere

**Threat Rank**
.1 Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)
.2 Fairly endangered in California (20% to 80% of occurrences threatened/moderate degree and immediacy of threat)
.3 Not very endangered in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

## References

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Ebbin, Moser + Skaggs LLP and Entomological Consulting Services, Ltd. 2013. Low-Effect Habitat Conservation Plan for the Issuance of an Incidental Take Permit Under Section 10(a)(1)(B) of the Endangered Species Act for the Federally Endangered Mount Hermon June Beetle Zayante Band Winged Grasshopper and Ben Lomond Spineflower for the City of Santa Cruz Graham Hill Water Treatment Plant Operations, Maintenance, and Construction Activities. June 2013.

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| ***Amphibians*** | | | | | |
| *Dicamptodon ensatus* | California giant salamander | None/SSC | Known from wet coastal forests and chaparral near streams and seeps from Mendocino Co. south to Monterey Co. and east to Napa Co. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes. | **High potential to occur.** The biological study area supports suitable habitat for this species. Many CNDDB occurrences for this species have been documented in coniferous and riparian forests in the region, including the North Coast Diversions (Liddell Spring, Reggiardo Creek, Laguna Creek, and Majors Creek) (CDFW 2020). | **Moderate potential to occur.** Suitable riparian habitat present at Felton Diversion and Tait Diversion. Urban riparian areas near regional interties are likely too disturbed (i.e., dominated by nonnative understory plants and predators) to support this species. |
| *Rana draytonii* | California red-legged frog | FT/SSC | Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands. | **High potential to occur.** The biological study area supports suitable habitat for this species. Many CNDDB occurrences for this species have been documented in ponds, wetlands, and riparian woodlands in the region (CDFW 2020). This species occurs in all the coastal creeks north of Santa Cruz, including Moore Creek, Wilder Creek, Old Dairy Gulch Creek, Lombardi Creek, Baldwin Creek, Majors Creek, Laguna Creek, Yellow Bank Creek, and Liddell Creek (Ebbin, Moser + Skaggs LLP et al 2021). | **Low potential to occur.** Marginally suitable riparian habitat present at Felton Diversion and Tait Diversion sites, but there are no recent occurrences in the San Lorenzo River watershed. Additionally, protocol-level surveys on City watershed lands in 2001 did not detect this species (City of Santa Cruz Water Department 2013). Urban riparian areas near City/SVWD and City/SqCWD/CWD intertie sites are likely too disturbed (i.e., dominated by nonnative understory plants and predators) to support this species. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Ambystoma californiense* | California tiger salamander | FT/ST | Annual grassland, valley–foothill hardwood, and valley–foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and man-made pools if predatory fishes are absent. | **Low potential to occur.** The biological study area supports suitable habitat for this species but it is limited to seasonal ponds west of Watsonville (CDFW 2020). | **Not expected to occur.** The infrastructure study area is outside of the species' known distribution in the county. |
| *Rana boylii* | foothill yellow-legged frog | None/SSC, PST | Rocky streams and rivers with open banks in forest, chaparral, and woodland. | **Low potential to occur.** The biological study area supports suitable habitat for this species. Many CNDDB occurrences for this species have been documented in streams in the region, including Soquel Creek upstream from Soquel and Wilder Creek on the UC Santa Cruz campus (CDFW 2020). | **Low potential to occur.** Individuals from Soquel Creek population may occasionally venture downstream near the City/SqCWD intertie site but such movements would be rare and sporadic, if they occur. |
| *Aneides flavipunctatus niger* | Santa Cruz black salamander | None/SSC | Restricted to mesic forests in the fog belt of the outer Coast Range of San Mateo, Santa Cruz, and Santa Clara counties. Mixed deciduous and coniferous woodlands and coastal grasslands. Occurs in moist streamside microhabitats and is found under rocks, talus, and damp woody debris. | **High potential to occur.** The biological study area supports suitable habitat for this species. Many CNDDB occurrences for this species have been documented in coniferous and riparian forests in the region (CDFW 2020). | **Moderate potential to occur.** Suitable riparian habitat present at Felton Diversion and Tait Diversion sites. Urban riparian areas near regional interties are likely too disturbed (i.e., dominated by nonnative understory plants and predators) to support this species. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Ambystoma macrodactylum croceum* | Santa Cruz long-toed salamander | FE/FP, SE | Temporary ponds for breeding and adjacent riparian vegetation, coastal scrub, and oak woodland during the nonbreeding season. This subspecies is restricted to southern Santa Cruz and northern Monterey Counties. Its entire distribution spans no more than 15 miles. | **Low potential to occur.** The biological study area supports suitable habitat for this species. Several CNDDB occurrences for this species have been documented in the southern part of the county (CDFW 2020). | **Moderate potential to occur.** CNDDB occurrence no. 5 at Valencia Lagoon is located approx. 1,000 feet southwest of the potential new pump station site at Rob Roy Junction (City/SqCWD/CWD intertie site) and marginal riparian habitat is present along a stormwater channel between Sabina Way and Soquel Drive. |
| ***Birds*** | | | | | |
| *Falco peregrinus anatum* | American peregrine falcon (nesting) | None/FP | Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present. | **High potential to occur.** The biological study area supports suitable nesting habitat for this species, especially along the coast. It has been observed at Loch Lomond Reservoir (Berry 2021). | **Not expected to occur.** The Infrastructure Study Area does not support suitable nesting habitat. |
| *Haliaeetus leucocephalus* | bald eagle (nesting & wintering) | BGEPA/SE, FP | Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains. | **High potential to occur.** The biological study area supports suitable habitat for this species, which has been observed at Loch Lomond Reservoir (Berry 2021). | **Moderate potential to occur.** Suitable nesting and foraging habitat present at Felton Diversion and Tait Diversion sites. High noise and visual disturbance levels associated with urban areas likely preclude occurrence at regional intertie sites. |
| *Riparia riparia* | bank swallow (nesting) | None/ST | Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration. | **Low potential to occur.** The biological study area does not support suitable habitat for the species. The only CNDDB occurrences for this species are historic (CDFW 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Cypseloides niger* | black swift (nesting) | None/SSC | Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats. | **High potential to occur.** The biological study area supports suitable habitat for this species. A few CNDDB occurrences for this species have been documented along the coast (CDFW 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Athene cunicularia* | burrowing owl | None/SSC | Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows. | **Low potential to occur (wintering).** The biological study area supports suitable habitat for this species. A few historic CNDDB occurrences for this species have been documented along the coast during the nonbreeding season. | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Laterallus jamaicensis coturniculus* | California black rail | None/FP, ST | Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |
| *Gymnogyps californianus* | California condor | FE/FP, SE | Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (*Sequoiadendron giganteus*); forages in relatively open habitats where large animal carcasses can be detected. | **Low potential to occur.** The biological study area is just outside the species' known geographic range. None of the experimental reintroduction sites are located in the biological study area. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |
| *Sternula antillarum browni* | California least tern (nesting colony) | FE/FP, SE | Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Rallus obsoletus* | California Ridgway's rail | FE/SE, FP | Tidal salt marshes of the San Francisco Estuary. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |
| *Aquila chrysaetos* | golden eagle (nesting & wintering) | BGEPA/FP | Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats. | **High potential to occur.** The biological study area supports suitable habitat for this species. A few CNDDB occurrences for this species have been documented in the Santa Cruz Mountains and Sierra Azul (CDFW 2020) and it has been observed at Loch Lomond Reservoir (Berry 2021). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Ammodramus savannarum* | grasshopper sparrow (nesting) | None/SSC | Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches. | **High potential to occur.** The biological study area supports suitable habitat for this species. Several eBird occurrences for this species have been documented in coastal grasslands west of Santa Cruz (eBird 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Vireo bellii pusillus* | least Bell's vireo (nesting) | FE/SE | Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. |
| *Asio otus* | long-eared owl (nesting) | None/SSC | Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats. | **High potential to occur.** The biological study area supports suitable habitat for this species. A few eBird occurrences for this species have been documented in the Santa Cruz Mountains (eBird 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Brachyramphus marmoratus* | marbled murrelet (nesting) | FT/SE | Nests in old-growth coastal forests, forages in subtidal and pelagic habitats. | **Moderate potential to occur.** The southwestern portion of the biological study area supports suitable habitat for this species but most known nesting areas are located in higher-quality habitat northwest of the BSA (CDFW 2020, Singer 2017). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Contopus cooperi* | olive-sided flycatcher (nesting) | None/SSC | Nests in mixed-conifer, montane hardwood–conifer, Douglas-fir, redwood, red fir, and lodgepole pine habitats; usually close to water. | **High potential to occur.** The biological study area supports suitable habitat for this species. Many eBird occurrences for this species have been documented in the region (eBird 2020). | **Low potential to occur.** Marginally suitable habitat is present at the Felton Diversion site and near the City/SVWD intertie site. |
| *Progne subis* | purple martin (nesting) | None/SSC | Nests and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands; in the Sacramento region often nests in weep holes under elevated freeways. | **High potential to occur.** The biological study area supports suitable habitat for this species. A few eBird occurrences for this species have been documented in the Santa Cruz Mountains (eBird 2020). | **Low potential to occur.** Marginally suitable habitat is present at the Felton Diversion site and near the City/SVWD intertie site. |
| *Phoebastria albatrus* | short-tailed albatross | FE/SSC | Nests on isolated, windswept islands of the western Pacific; extremely rare in migration offshore along the California coast. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |
| *Empidonax traillii extimus* | southwestern willow flycatcher (nesting) | FE/SE | Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Agelaius tricolor* | tricolored blackbird (nesting colony) | None/SSC, ST | Nests in freshwater, emergent wetlands with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture. | **High potential to occur.** The biological study area supports suitable habitat for this species. A few CNDDB occurrences for this species have been documented in freshwater wetlands near the coast (CDFW 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Charadrius alexandrinus nivosus* | western snowy plover (nesting) | FT/SSC | On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds. | **Low potential to occur.** The biological study area supports suitable habitat for this species. A few CNDDB occurrences for this species have been documented at coastal beaches (CDFW 2020). | **Not expected to occur.** The infrastructure study area does not support suitable habitat for this species. |
| *Elanus leucurus* | white-tailed kite (nesting) | None/FP | Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands. | **High potential to occur.** The biological study area supports suitable habitat for this species. Several occurrences for this species have been documented in the region (CDFW 2020, eBird 2020). | **Moderate potential to occur.** The infrastructure study area supports trees that provide suitable nest sites, although no individuals were detected during the May 6, 2020 site visit. |
| *Setophaga petechia* | yellow warbler (nesting) | None/SSC | Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats. | **High potential to occur.** The biological study area supports suitable habitat for this species. Many eBird occurrences for this species have been documented in the region (eBird 2020). | **High potential to occur.** The Felton Diversion and Tait Diversion sites contain suitable riparian habitat. Individual heard singing north of Felton Diversion site during the May 6, 2020 site visit. |
| *Icteria virens (nesting)* | yellow-breasted chat | None/SSC | Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush. | **High potential to occur.** The biological study area supports suitable habitat for this species. Many eBird occurrences for this species have been documented in the region (eBird 2020). | **Moderate potential to occur.** The Felton Diversion and Tait Diversion sites contain marginal riparian habitat for this species. No individuals were detected during the May 6, 2020 site visit. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Fishes* | | | | | |
| *Oncorhynchus kisutch* pop. 4 | coho salmon - central California coast ESU | FE/SE | Coho spend approximately the first half of their life cycle rearing and feeding in streams and small freshwater tributaries. Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean. They feed on plankton and insects in freshwater and switch to a diet of small fishes while in the ocean. Southern limit of range is in central Santa Cruz County. | **High potential to occur.** The biological study area supports suitable habitat for this species. Several CNDDB occurrences for this species have been documented throughout the Laguna, Liddell, Majors, San Lorenzo, and Soquel watersheds (Berry 2021; CDFW 2020). | **Low potential to occur.** The reach of the San Lorenzo River near the proposed Felton Diversion and Tait Diversion sites may support suitable habitat for this species. |
| *Thaleichthys pacificus* | eulachon | FT/None | Found in Klamath River, Mad River, and Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |
| *Lavinia symmetricus subditus* | Monterey roach | None/SSC | Tributaries to Monterey Bay, specifically the Salinas, Pajaro, & San Lorenzo drainages. Generally found in small, intermittent streams, where dense populations are often observed in isolated pools. | **High potential to occur.** The biological study area supports suitable habitat for this species. Several CNDDB occurrences for this species have been documented within the San Lorenzo River and Soquel Creek (CDFW 2020). | **High potential to occur.** Suitable habitat for this species occurs within San Lorenzo River near the Felton Diversion and Tait Diversion sites, as well as within Soquel Creek at Porter Street near the City/SqCWD/CWD intertie site. |

### Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Entosphenus tridentatus* | Pacific lamprey | None/SSC | Freshwater habitat includes lakes, rivers, and creeks; soft substrates in shallow areas along banks. | **High potential to occur.** The biological study area supports suitable habitat for this species. This species is present in several areas of the San Lorenzo River watershed (including lagoon and lower river), but are absent from the City's other flowing streams, including Laguna Creek, Liddell Creek, and Majors Creek (Berry 2021; City of Santa Cruz 2015). | **High potential to occur.** The reach of the San Lorenzo River near the proposed Felton Diversion and Tait Diversion sites support suitable habitat for this species. This species has been caught or observed in numerous reaches of San Lorenzo River (estuary to Kings Creek) and its major tributaries including Zayante Creek, Bean Creek, Fall Creek, Boulder Creek, Bear Creek, and Branciforte Creek (Ebbin, Moser + Skaggs LLP et al 2021). |
| *Oncorhynchus mykiss irideus* pop. 8 | steelhead - central California coast DPS | FT/None | Spawns in streams from the Russian River, Sonoma County, to Aptos Creek, Santa Cruz County, California (inclusive). Also occur in drainages tributary to San Francisco and San Pablo Bays. Regardless of life history strategy, for the first year or two of life rainbow trout and steelhead are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, there is ample cover from riparian vegetation or undercut banks, and invertebrate life is diverse and abundant. | **High potential to occur.** The biological study area supports suitable habitat for this species. Several CNDDB occurrences for this species have been documented throughout the Laguna, Liddell, Majors, San Lorenzo and other watersheds (CDFW 2020). | **High potential to occur.** The reach of the San Lorenzo River near the proposed Felton Diversion and Tait Diversion sites support suitable habitat for this species. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Oncorhynchus mykiss irideus* pop. 9 | steelhead - south-central California coast DPS | FT/None | Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. |
| *Eucyclogobius newberryi* | tidewater goby | FE/SSC | Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River. | **High potential to occur.** The biological study area supports suitable habitat for this species. Several CNDDB occurrences for this species have been documented within lower reaches of coastal streams in the region (CDFW 2020). Additionally, this species is known to inhabit, or recently inhabit, several coastal lagoons within Santa Cruz County, including Laguna Creek, Baldwin Creek, Lombardi Gulch, Old Dairy Gulch, Wilder Creek, Younger Lagoon, Moore Creek, San Lorenzo River, Corcoran Lagoon, and Moran Lake (Ebbin, Moser + Skaggs LLP et al 2021). | **Low potential to occur.** This species is limited to the coastal lagoons and mouths of San Lorenzo River and Soquel Creek (Ebbin, Moser + Skaggs LLP et al 2021). CNDDB occurrences of this species are documented 1.7 and 0.1 miles downstream of the Tait Diversion site and City/SqCWD/CWD intertie site, respectively (CDFW 2020). |
| ***Invertebrates*** | | | | | |
| *Euphydryas editha bayensis* | Bay checkerspot butterfly | FT/None | Serpentine grassland in Santa Clara and San Mateo Counties. Primary host plant is native plantain (*Plantago erecta*) with two secondary host plants: purple owl's-clover (*Castilleja densiflora*) and exserted paintbrush (*Castilleja exserta*). | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area occurs outside the species' known geographic range. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Polyphylla barbata* | Mount Hermon (=barbate) June beetle | FE/None | Known only from sand hills in vicinity of Mount Hermon, Santa Cruz County, where it occurs in sparsely vegetated ponderosa pine and chaparral habitat with sandy sedimentary derived soils in the Zayante Sandhills formation. | **High potential to occur.** The biological study area supports suitable Zayante Sandhills habitat. There are several CNDDB occurrences for this species within the sandhills near Mount Hermon (CDFW 2020). Additionally, this species is known to occur at the Graham Hill Water Treatment Plant (Ebbin, Moser + Skaggs LLP and Entomological Consulting Services, Ltd. 2013). | **Moderate potential to occur.** Although portions of the Zayante Sandhills formation overlap the infrastructure study area, the proposed City/SVWD intertie alignment supports poor quality habitat adjacent to La Madrona Drive where improvements would occur. |
| *Cicindela ohlone* | Ohlone tiger beetle | FE/None | Remnant native grasslands with California oatgrass (*Danthonia californica*) and purple needlegrass (*Stipa pulchra*) in Santa Cruz County. | **High potential to occur.** The biological study area supports suitable grassland habitat near the coast. This species is known to occur at the Moore Creek Open Space and Younger Ranch (Ebbin, Moser + Skaggs LLP et al 2021). | **Moderate potential to occur.** Although portions of the Zayante formation overlap the infrastructure study area, the proposed City/SVWD intertie alignment supports poor quality habitat adjacent to La Madrona Drive where improvements would occur. |
| *Callophrys mossii bayensis* | San Bruno elfin butterfly | FE/None | Restricted to San Mateo County; known colonies occur at San Bruno Mountain, the Montara Mountain region, and Milagra Ridge. Within these areas it occurs in coastal grasslands and low scrub on north-facing slopes that support stonecrop (*Sedum sphathulifolium*), its only known larval host plant. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Euphilotes enoptes smithi* | Smith's blue butterfly | FE/None | Restricted to Monterey and Santa Cruz Counties, where they occur in coastal sand dunes, coastal sage scrub, chaparral, grassland, and their ecotones. | **High potential to occur.** Suitable habitat for this species occurs within the biological study area. Historic CNDDB occurrences for this species have been documented at Mount Hermon in 1983 and along Loma Prieta Road in 1999 (CDFW 2020). | **Not expected to occur.** The infrastructure study area lacks suitable dune, coastal sage scrub, chaparral, or grassland habitat to support this species. |
| *Bombus occidentalis* | western bumble bee, southern subspecies | None/PSE | Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease. Current known locations are high elevation sites in northern California and a few sites on the northern California coast. Nests underground in squirrel burrows, in mouse nests, and in open west-southwest facing slopes bordered by trees. | **Low potential to occur.** The biological study area is outside of this subspecies' known geographic range. There are CNDDB occurrences in the project area but most are historic and lack specific locality information. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Trimerotropis infantilis* | Zayante band-winged grasshopper | FE/None | Open sandy areas with sparse, low annual and perennial herbs on high ridges and hills with sparse ponderosa pine within the Zayante Sandhills formation in Santa Cruz County. | **High potential to occur.** The biological study area supports suitable Zayante Sandhills habitat. Six CNDDB occurrences of this species have been documented within the region (CDFW 2020). Additionally, this species may occur at the Bonny Doon mitigation site, but has not been detected during focused surveys conducted to date (Ebbin, Moser + Skaggs LLP and Entomological Consulting Services, Ltd. 2013). | **Moderate potential to occur.** Although portions of the Zayante Sandhills formation overlap the infrastructure study area, the proposed City/SVWD intertie alignment supports poor quality habitat adjacent to La Madrona Drive where improvements would occur. |
| *Mammals* | | | | | |
| *Taxidea taxus* | American badger | None/SSC | Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils. | **Low potential to occur.** The biological study area supports suitable habitat for this species. A few historic CNDDB occurrences have been documented in the region. | **Low potential to occur.** The infrastructure study area supports low-quality habitat within 500 feet of La Madrona Drive (i.e., City/SVWD intertie) but no dens were observed in the areas where improvements would occur during the May 6, 2020 site visit. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Antrozous pallidus* | pallid bat | None/SSC | Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees. | **High potential to occur.** The biological study area supports suitable habitat for this species. | **Moderate potential to occur.** Except for the Beltz well system, the infrastructure study area supports suitable habitat for this species. Trees with large hollows and structures within 500 feet of programmatic components could support roosting bats but no such features were observed in the areas where improvements would occur during the May 6, 2020 site visit. |
| *Neotoma fuscipes annectens* | San Francisco dusky-footed woodrat | None/SSC | Forest habitats with a moderate canopy and moderate to dense understory. | **High potential to occur.** The biological study area supports suitable habitat for this species. | **High potential to occur.** Except for the Beltz Well System, the infrastructure study area supports suitable habitat for this species. A single stick nest was observed 110 feet west of the intersection of Huntington Drive and Valencia Road (i.e., City/SqCWD/CWD intertie site) on May 6, 2020. No nests were observed in the areas where proposed improvements would occur at this and other locations on May 6 but may be present in riparian or forested habitat within 500 feet. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Enhydra lutris nereis* | southern sea otter | FT/SSC, FP | Nearshore marine environments. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area is outside of the species' known geographic range. |
| *Corynorhinus townsendii* | Townsend's big-eared bat | None/SSC | Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels. | **Moderate potential to occur.** The biological study area supports suitable habitat for this species. A few historic CNDDB occurrences have been documented in the region but no recent occurrences. | **Low potential to occur.** The infrastructure study area may support structures suitable for roosting within 500 feet of La Madrona Drive (i.e., City/SVWD intertie site), Felton Diversion site, Tait Diversion site, and the SqCWD/CWD intertie site but no structures were observed in the areas where improvements would occur during the May 6, 2020 site visit. |
| ***Reptiles*** | | | | | |
| *Phrynosoma blainvillii* | coast horned lizard | None/SSC | Wide range of habitats, most common in lowlands along sandy washes with scattered low bushes. | **Low potential to occur.** The biological study area does not support suitable habitat for the species. The closest known occurrence is approx. 9 miles to the south in Marina (CDFW 2020). | **Not expected to occur.** The infrastructure study area is outside of the species' known distribution in the county. |
| *Anniella pulchra* | northern California legless lizard | None/SSC | Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils. | **High potential to occur.** The biological study area supports suitable habitat for this species but it is limited to coastal dunes on Sunset State Beach west of Watsonville (CDFW 2020). | **Not expected to occur.** The infrastructure study area is outside of the species' known distribution in the county. |

## Table F-2. Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

| Scientific Name | Common Name | Status Federal/State | Primary Habitat Associations | Potential to Occur in Biological Study Area | Potential to Occur in Infrastructure Study Area |
|---|---|---|---|---|---|
| *Thamnophis sirtalis tetrataenia* | San Francisco garter snake | FE/SE, FP | Endemic to San Francisco Peninsula from northern San Mateo County along eastern Santa Cruz Mountains and west to Point Año Nuevo. Most commonly associated with emergent vegetation along the borders of ponds, marshes, and lakes. Rodent burrows in adjacent uplands are an important habitat component as they provide hibernation sites and escape cover. | **Not expected to occur.** The biological study area is outside of the species' known geographic range. | **Not expected to occur.** The infrastructure study area occurs outside the species' known geographic range. |
| *Emys (=Actinemys) marmorata* | western pond turtle | None/SSC | Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter. | **High potential to occur.** The biological study area supports suitable habitat for this species. Many CNDDB occurrences for this species have been documented in ponds and streams in the region (CDFW 2020). | **High potential to occur.** The reach of the San Lorenzo River near the proposed Felton Diversion and Tait Diversion sites support suitable habitat for this species. The reach of Soquel Creek near the City/SqCWD intertie site also supports suitable habitat. |

**Notes:** CNDDB = California Natural Diversity Database; CWD = Central Water District; DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit; SqCWD = Soquel Creek Water District; SVWD = Scotts Valley Water District.

**Status Legend**

<u>Federal</u>

BCC: Bird of Conservation Concern
BGEPA: Bald and Golden Eagle Protection Act
FC: Candidate for federal listing as threatened or endangered
FDL: Federally delisted; monitored for 5 years
FE: Federally listed endangered
FT: Federally listed as threatened

<u>State</u>

PSE: Proposed state listing as endangered
SDL: State delisted
SSC: Species of Special Concern
FP: California Department of Fish and Wildlife Protected and Fully Protected Species
SE: State listed as endangered
ST: State listed as threatened

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# Appendix G

## Cultural Resources Inventory, Evaluation, and Finding of Effect Report

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# CULTURAL RESOURCES INVENTORY AND EVALUATION REPORT FOR THE SANTA CRUZ WATER RIGHTS PROJECT

*Prepared for:*

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## APPENDICES



## EXHIBITS

## TABLES

# Executive Summary

The City of Santa Cruz (City) retained Dudek to complete a cultural resources technical report for the Santa Cruz Water Rights Project (Proposed Project) environmental impact report (EIR). Cultural resources investigations for the Proposed Project include both project-level and programmatic-level analyses.

The Proposed Project includes 11 discontiguous infrastructure components (study area). Since federal permits may be needed and/or federal funding may be used for some of the components and are therefore considered federal undertakings, the City requested that this technical report comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966 and the California Environmental Quality Act (CEQA). Hence 6 of the 11 study area components are included as part of the cultural resources discontiguous Areas of Potential Effect (APEs). Table 1 provides a list of the project components and programmatic components.

### Table 1. Project and Programmatic Components

| Proposed Project Components | Project Components | Programmatic Components |
|---|---|---|
| **WATER RIGHTS MODIFICATIONS** | | |
| Place of Use | ✓ | |
| Points of Diversion | ✓ | |
| Underground Storage and Purpose of Use | ✓ | |
| Method of Diversion | ✓ | |
| Extension of Time | ✓ | |
| Bypass Requirement (Agreed Flows) | ✓ | |
| **INFRASTRUCTURE COMPONENTS** | | |
| ***Water Supply Augmentation Components*** | | |
| Aquifer Storage and Recovery (ASR) | | ✓ |
| New ASR Facilities at Unidentified Locations | | ✓ |
| Beltz ASR Facilities at Existing Beltz Well Facilities | ✓ | |
| Water Transfers and Exchanges and Intertie Improvements | | ✓ |
| ***Surface Water Diversion Improvements*** | | |
| Felton Diversion Fish Passage Improvements | | ✓ |
| Tait Diversion and Coast Pump Station Improvements | | ✓ |

Dudek prepared discontiguous Areas of Potential Effect (APEs) maps and performed Section 106 level work for the six project and programmatic components (undertakings) in the study area (aquifer storage and recovery [ASR] at 4 known sites [Beltz ASR]; Felton Diversion fish passage improvements; and Tait Diversion and Coast Pump Station improvements), per NHPA's implementing regulations (36 CFR 800.4). This document includes a delineation of discontiguous APEs and cultural resources inventory to determine the presence or absence of historic properties and potential effects. The results of the assessment show there are no historic properties in the six APEs and low potential for encountering unknown archaeological resources during the planned construction. Dudek recommends a finding of *No Historic Properties Affected* for the six project and programmatic undertakings under Section 106. The CEQA finding for historic built environmental resources for the six project and programmatic components is *no* *impact*. The CEQA finding for archaeological cultural resources for the six project and programmatic components is recommended as *Less-than-Significant with Mitigation*.

Regarding the five programmatic components for which Section 106 level analysis was not conducted (new ASR facilities and water transfer and exchanges and intertie improvements); cultural resources inventory information is presented below along with CEQA findings and mitigation measures, where warranted, based on the information available at this time.

For all components of the study area, this report included the following elements: (1) a California Historical Resources Information System (CHRIS) records search conducted at the Northwest Information Center (NWIC) addressing the proposed APE plus a 0.25-mile radius; (2) a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC) and outreach to Native American contacts with local information about cultural and tribal cultural resources in the vicinity of the discontiguous APEs; (3) a pedestrian survey of the study area for archaeological and built environment resources.

Within the six components with discontiguous APEs this reports included a historical significance evaluation of two historic era properties containing multiple buildings and structures, and findings related to impacts to cultural resources under CEQA, project effects to historic properties in conformance with Section 106 of the NHPA, and in consideration of all applicable local municipal code and planning documents. Neither built environment property evaluated for historic significance was found to be eligible for listing at the federal, state, or local level.

# 1 Introduction

This section provides a detailed description of the proposed Santa Cruz Water Rights Project (Proposed Project), and includes information about the location and setting, along with a detailed project description. All project location and project description figures can be found in **Appendix A.** This chapter also presents the regulatory setting, description of the discontiguous areas of potential effect (APEs) and presents project personnel.

## 1.1 Project Location and Setting

The Proposed Project involves the water system and area of service of the City of Santa Cruz (City) and the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The Proposed Project is located within Santa Cruz County (County) and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (**Appendix A**, Figure 1). Additional information about project location and setting is presented below.

## 1.2 Project Description

This section provides a summary description of the Proposed Project and includes information about the project characteristics.

### 1.2.1 Introduction

The Proposed Santa Cruz Water Rights Project (Proposed Project) includes proposed modifications to the City's existing water rights to improve flexibility in operation of the City's water system to better use limited water resources, while enhancing stream flows for local anadromous fisheries. The Proposed Project also includes water supply augmentation components and surface water diversion improvements that could be implemented after the water rights modifications are approved. The attached figures show the City's existing water facilities, the expanded place of use, and locations of proposed infrastructure improvements.

As shown in Table 1 in the Executive Summary, the Proposed Project includes components that will be considered in the pending EIR at a "project" level (project component) and components that will be considered at a "programmatic" level (programmatic component), and therefore the pending EIR will be both a project EIR and a programmatic EIR. The subsections below further describe these project components and programmatic components.

### 1.2.2 Water Rights Modifications

Project components of the Proposed Project include modifications to the City's existing pre-1914 and post-1914 appropriative water rights. The City will pursue changes to its pre-1914 water rights through action by the Santa Cruz City Council and changes to its post-1914 permits and licenses through the filing of change and extension petitions with the State Water Resources Control Board (SWRCB). No change to the authorized amounts of diversions under any of the City's appropriative water rights is proposed as part of the Proposed Project. Overall, implementation of these modifications would provide the City greater flexibility in the operation of the water system while enhancing stream flows for local anadromous fisheries. The water rights modifications include modifications related to place of use, method of diversion, points of diversion and rediversion, underground storage and purpose of use, extension of time and stream bypass requirements for fish habitat (referred to in this EIR as Agreed Flows).

## 1.2.3 Water Supply Augmentation Components

### 1.2.3.1 Aquifer Storage and Recovery

The City's Water Supply Augmentation Strategy portfolio elements include active recharge of regional aquifers referred to as aquifer storage and recovery or ASR. ASR involves using existing infrastructure and potential new infrastructure to inject surface water, treated to drinking water standards, and storage of this water during normal or wet years in local groundwater basins, which would act as underground storage reservoirs. This stored water can then be available for use by the City in drought years via extraction.

The Proposed Project includes the City installing and operating ASR facilities within the Santa Cruz Mid-County Groundwater Basin inside or outside the areas served by the City, and in the Santa Margarita Groundwater Basin outside the areas served by the City. ASR would include new ASR facilities at unidentified locations (referred to as "new ASR facilities" in this report) and Beltz ASR facilities at the existing Beltz well facilities (referred to as "Beltz ASR facilities" in this report). Overall, ASR is a programmatic component of the Proposed Project; however, as a subcomponent of ASR, Beltz ASR facilities are a project component of the Proposed Project. Further planning and analysis are required to determine locations for any potential new ASR facilities.

### 1.2.3.2 Water Transfers and Exchanges and Intertie Improvements

The City's Water Supply Augmentation Strategy portfolio elements also include passive recharge of regional aquifers by transferring water to other water districts in the area so they can rest their groundwater wells, help the aquifers recover, and potentially store water for use by the City in drought years.

Modification of the City's appropriative water rights would facilitate the opportunity for potential future water transfers and exchanges with neighboring water agencies, including Scotts Valley Water District (SVWD), San Lorenzo Valley Water District (SLVWD), Soquel Creek Water District (SqCWD) and Central Water District (CWD). Water transfers and exchanges and associated interties are evaluated as a programmatic component of the Proposed Project. Such transfers and exchanges would likely be provided for via agreements with defined terms related to timing, volume of water, water year conditions, return of water, etc., that would be developed between the City and one or more of the neighboring agencies. New or improved interties between the water systems of the City and of neighboring water agencies may be needed to facilitate future water transfers and exchanges once City water rights are modified. The Proposed Project anticipates these potential water transfers and exchanges and new and improved interties, which include new or upgraded pipelines and new or upgraded pump stations needed to transfer water between and through the services areas of the referenced water agencies. Specifically, the Proposed Project anticipates a new pipeline and pump station to intertie the water systems of the City and SVWD. Additionally, two segments of replacement piping, an upgraded pump station and two new pump stations are needed to intertie the water systems of the City, SqCWD and CWD.

### 1.2.4 Surface Water Diversion Improvement Components

Improvements at the Felton Diversion and Tait Diversion and Coast Pump Station are included as programmatic components of the Proposed Project.

#### 1.2.4.1 Felton Diversion Fish Passage Improvements

The Felton Diversion is a surface water diversion/intake on the San Lorenzo River that pumps raw water from the river to the City's Loch Lomond Reservoir. Proposed fish passage improvements at the Felton Diversion would provide for compliance with current fish passage and screening requirements. The modifications would be designed to support use of City water rights while improving passage for coho salmon and steelhead. These improvements may include fish screen replacement, installation of a traveling brush system to keep the fish screens operating at optimum efficiency, and construction of a continuous downstream outmigration bypass route within the existing bypass channel with downstream opening slide gate.

#### 1.2.4.2 Tait Diversion and Coast Pump Station Improvements

The Tait Diversion is located on a fairly straight, low-gradient section of the San Lorenzo River approximately 2.4 miles upstream of the mouth of the river and adjacent to the Coast Pump Station facility. Improvements at the Tait Diversion could include, but would not be limited to, (1) a new or modified intake design with increased capacity to allow the City the option of diverting water under the existing Felton Diversion water rights at either the Felton Diversion or at the Tait Diversion, (2) upstream and/or downstream hydraulic modifications, (3) improvements to the check dam, and (4) any required fish passage upgrades to meet current state and federal fisheries protection criteria. The River Pumps at the Coast Pump Station facility would also require improvements, which could include, but would not be limited to, (1) new pumps and motors, (2) primary and backup power upgrades, which could include upgrades to the Pacific Gas & Electric substation, (3) a new or modified concrete wet well, and (4) a solids handling system.

### 1.2.5 Standard Operational and Construction Practices

The Proposed Project also includes standard operational and construction practices that would be implemented during project operations and construction activities to minimize environmental impacts. Construction practices No. 24 and No. 25 relate to archaeological resources and human remains as described below:

24. In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the Proposed Project, immediately stop all construction work occurring within 100 feet of the find until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find, and whether the archaeological resources qualify as unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources. The archaeologist will determine whether additional study is warranted. Should it be required, the archaeologist may install temporary flagging around a resource to avoid any disturbances from construction equipment. Depending upon the significance of the find under CEQA (14 CCR 15064.5[f]; California Public Resources Code, Section 21082), the archaeologist may record the find to appropriate standards (thereby addressing any data potential) and allow work to continue. If the archaeologist observes the discovery to be potentially significant under CEQA, preservation in place or additional treatment may be required.

25. In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, immediately notify the lead agency staff and the County Coroner of the discovery. The coroner would provide a determination within 48 hours of notification. No further excavation or disturbance of the identified material, or any area reasonably suspected to overlie additional remains, can occur until a determination has been made. If the County Coroner determines that the remains are, or are believed to be, Native American, the coroner would notify the Native American Heritage Commission within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the Most Likely Descendant from the deceased Native American. Within 48 hours of this notification, the Most Likely Descendant would recommend to the lead agency her/his preferred treatment of the remains and associated grave goods.

Table 2 below provides the corresponding figure number for each of the Study Area components discussed in the preceding section. Figures are located in Appendix A.

**Table 2. Study Area Components with Appendix A Figure Numbers**

| Study Area Components | Appendix A—Figure number |
|---|---|
| Beltz 8 ASR Facility | 4a |
| Beltz 9 ASR Facility | 4b |
| Beltz 10 ASR Facility | 4c |
| Beltz 12 ASR Facility | 4d |
| City/SVWD Intertie - New Pipeline and Pump Station | 4e |
| City/SqCWD/CWD Intertie - Soquel Village Pipeline | 4f |
| City/SqCWD/CWD Intertie - Park Avenue Pipeline and McGregor Drive Pump Station Upgrade | 4f |
| City/SqCWD/CWD Intertie - Freedom Boulevard Pump Station | 4g |
| City/SqCWD/CWD Intertie - Valencia Road Pump Station | 4g |
| Felton Diversion Improvements | 4h |
| Tait Diversion and Coast Pump Station Improvements | 4i |

# 1.3 Regulatory Setting

This study was completed in compliance with federal cultural resources laws and regulations, including Section 106 of the NHPA. Under Section 106, historic and archaeological districts, sites, buildings, structures, and objects are assigned significance based on their exceptional value or quality in illustrating or interpreting history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance and are described below.

## 1.3.1 Federal

The NHPA established the NRHP and the President's Advisory Council on Historic Preservation (ACHP), and provided that states may establish State Historic Preservation Officers to carry out some of the functions of the NHPA. Most significantly, for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs that

> [t]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP.

Section 106 also affords the ACHP a reasonable opportunity to comment on the undertaking (16 U.S.C. 470f).

Title 36 of the Code of Federal Regulations, Part 800 (36 CFR 800) implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes to identify resources with important cultural values; to determine whether or not they may be adversely affected by a proposed undertaking; and the process for eliminating, reducing, or mitigating the adverse effects.

The content of 36 CFR 60.4 defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historic significance in consultation with the ACHP and the California State Historic Preservation Officer to determine if the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they meet one of more of the criteria and possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Regarding criteria A through D of Section 106, the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, cultural resources, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that (36 CFR 60.4):

A. Are associated with events that have made a significant contribution to the broad patterns of our history; or
B. Are associated with the lives of persons significant in our past; or
C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. have yielded or may be likely to yield, information important in prehistory or history.

The 1992 amendments to the NHPA enhance the recognition of tribal governments' roles in the national historic preservation program, including adding a member of an Indian tribe or Native Hawaiian organization to the ACHP.

The NHPA amendments:

- Clarify that properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion in the National Register
- Reinforce the provisions of the Council's regulations that require the federal agency to consult on properties of religious and cultural importance.

The 1992 amendments also specify that the ACHP can enter into agreement with tribes that permit undertakings on tribal land and that are reviewed under tribal regulations governing Section 106. Regulations implementing the NHPA state that a federal agency must consult with any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by an undertaking.

## 1.3.2 State

### 1.3.2.1 California Register of Historical Resources

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code Section 5020.1(j)). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code Section 5024.1(a)). The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP including associated historic integrity considerations and are enumerated below. According to California Public Resources Code Section 5024.1(c)(1–4), a resource is considered historically significant if it meets at least one of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history.

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see 14 CCR 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

### 1.3.2.2 California Environmental Quality Act

As described further below, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- California Public Resources Code Section 21083.2(g) defines "unique archaeological resource."
- California Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5(a) define "historical resources." In addition, CEQA Guidelines Section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource." It also defines the circumstances when a project would materially impair the significance of an historical resource (an element of a "substantial adverse change" to the resource) (see discussion below).
- California Public Resources Code Section 21074(a) defines "tribal cultural resources."
- California Public Resources Code Section 5097.98 and CEQA Guidelines Section 15064.5(e) set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.
- California Public Resources Code Sections 21083.2(b)-(c) and CEQA Guidelines Section 15126.4 provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to both unique archaeological resources and "historical resources of an archaeological nature" because it maintains the relationship between artifacts and the archaeological context and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

### Historical Resources

More specifically, under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5(b).) If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources or identified as significant in a historical resources survey (meeting the requirements of California Public Resources Code Section 5024.1(q)), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5(a)).

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064.5(b)(1); California Public Resources Code Section 5020.1(q)). In turn, CEQA Guidelines section 15064.5(b)(2) states the significance of an historical resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any "historical resources," then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

Where a project has been determined to conform with the Secretary of the Interior's Standards, the project's impact on historical resources would be considered mitigated to below a level of significance and, thus, not significant (14 CCR 15126.4(b)(1)). In most cases, a project that demonstrates conformance with the Secretary of the Interior's Standards is categorically exempt from CEQA (14 CCR 15331), as described in the CEQA Guidelines:

> Where maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of the historical resource will be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Weeks and Grimmer 1995), the project's impact on the historical resource shall generally be considered mitigated below a level of significance and thus is not significant (14 CCR 15126.4(b)(1)).

The Secretary of the Interior's Standards are a series of concepts focused on maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations. They function as common-sense historic preservation principles that promote historic preservation best practices. There are four distinct approaches that may be applied to the treatment of historical resources:

- **Preservation** focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- **Rehabilitation** acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- **Restoration** depicts a property at a particular period of time in its history, while removing evidence of other periods.
- **Reconstruction** recreates vanished or non-surviving portions of a property for interpretive purposes.

The choice of treatment depends on a variety of factors, including the property's historical significance, physical condition, proposed use, and intended interpretation. The Guidelines provide general design and technical recommendations to assist in applying the Standards to a specific property. Together, the Standards and Guidelines provide a framework that guides important decisions concerning proposed changes to a historic property.

### Unique Archaeological Resources

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (California Public Resources Code Section 21083.2[a], [b], and [c]).

California Public Resources Code Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Impacts to non-unique archaeological resources are generally not considered a significant environmental impact (California Public Resources Code section 21083.2(a); CEQA Guidelines Section 15064.5(c)(4)). However, if a non-unique archaeological resource qualifies as tribal cultural resource (California Public Resources Code Section 21074(c), 21083.2(h)), further consideration of significant impacts is required. CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in California Public Resources Code Section 5097.98.

### California Environmental Quality Act Assembly Bill 52 Consultation

State Assembly Bill (AB) 52, effective July 1, 2015, recognizes that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities. The law establishes a separate category of resources in the CEQA called “tribal cultural resources” that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation. Public Resources Code Section 21074 defines a “tribal cultural resource” as either:

- Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Nature American tribe that is either listed, or determined to be eligible for listing, on the national, state, or local register of historic resources; or
- A resource determined by the lead agency chooses, in its discretion and supported by substantial evidence, to treat as a tribal cultural resource.

The California Public Resources Code Section 21084.2 now establishes that “[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.” The Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project.

### California Health and Safety Code

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the County Coroner has examined the remains (California Health and Safety Code Section 7050.5b). Public Resources Code Section 5097.98 outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the Native American Heritage Commission (NAHC) within 24 hours (California Health and Safety Code Section 7050.5c). The NAHC would notify the most likely descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

## 1.3.3 Local - Santa Cruz County

### 1.3.3.1 Santa Cruz County Native American Cultural Sites and Paleontological Resource Protection

Chapters 16.40 (Native American Cultural Sites) and 16.44 (Paleontological Resource Protection) of the Santa Cruz County Code outline methods and regulations for the identification and treatment of cultural and paleontological resources within the County.

### 1.3.3.2 Santa Cruz County Historic Resources Inventory

Cultural Landmarks in the County of Santa Cruz are termed Historic Resources and are under the aegis of the Planning Department, County of Santa Cruz. A list of Historic Resources is maintained in the County's Historic Resources Inventory, which identifies those Historic Resources located in the unincorporated areas of the County. Historic Resource is defined in Chapter 16:42 Historic Preservation within Title 16: Environmental and Resource Protection as follows (County Code 16.42.030 (I) [Ord. 5061 § 28, 2009; Ord. 4922 § 1, 2008])

> … means any structure, object, site, property, or district which has a special historical, archaeological, cultural or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the County, State, or nation, and which either has been referenced in the County General Plan, or has been listed in the historic resources inventory adopted pursuant to SCCC 16.42.050 and has a rating of significance of NR-1, NR-2, NR-3, NR-4, or NR-5.

In order to be placed on the County Historic Resources Inventory, a property must first be evaluated for its ability to meet one or more of the following criteria: (County Code 16.42.050 Historic Resource Designation [Ord. 4922 § 1, 2008]).

1. The resource is associated with a person of local, State or national historical significance.
2. The resource is associated with an historic event or thematic activity of local, State or national importance.
3. The resource is representative of a distinct architectural style and/or construction method of a particular historic period or way of life, or the resource represents the work of a master builder or architect or possesses high artistic values.
4. The resource has yielded, or may likely yield, information important to history.

### 1.3.3.3 Santa Cruz County Historic Districts

The County of Santa Cruz defines Historic District as (County Code 16.42.030 (E) [Ord. 5061 § 28, 2009; Ord. 4922 § 1, 2008]):

1. Have character of special historic or aesthetic interest or value; and
2. Represent one or more periods or styles of architecture typical of one or more eras in the history of the County; and
3. Cause such area, by reason of these factors, to constitute a geographically definable area possessing a significant concentration or continuity of sites, buildings, structures, or objects that are unified by past events, or aesthetically by plan or physical development.

### 1.3.4 Local - City of Santa Cruz

#### 1.3.4.1 Protection of Archaeological Resources.

1. Policy and Purpose. Existing in Santa Cruz are certain deposits and sites of cultural significance believed to have been left by Native Americans and other early inhabitants. These deposits and sites are unique and irreplaceable phenomena of significance in the history of the City and the understanding of the cultural heritage of our land and of all humankind. Such sites have a deep, spiritual significance to Native Americans, especially the native peoples of the State of California, and constitute a precious archaeological and historical heritage, which is fast disappearing as a result of public and private land development. Uncontrolled excavation or modification of these resources would destroy their cultural integrity. This loss would affect future generations and must be prevented in the public interest. Such cultural resources should be preserved in an undisturbed state wherever possible, for future generations who should be more skilled and have access to better methods of study. In order to promote the public welfare, it is necessary to provide regulations for the protection, enhancement, and perpetuation of such sites. This section therefore, is intended to provide a procedure for preserving the valuable cultural resources in the City of Santa Cruz.
2. Developer's Action on Discovery of Artifacts or Remains During Excavation or Development. Any person exercising a development permit or building permit who, at any time in the preparation for or process of excavating or otherwise disturbing earth, discovers any human remains of any age or any artifact or any other object which reasonably appears to be evidence of an archaeological/cultural resource, shall:
   a. Immediately cease all further excavation, disturbance, and work on the project site;
   b. Cause staking to be placed completely around the area of discovery by visible stakes not more than ten feet apart forming a circle having a radius of not less than one hundred feet from the point of discovery; provided, that such staking need not take place on adjoining property unless the owner of the adjoining property authorizes such staking;
   c. Notify the Santa Cruz County sheriff-coroner and the city of Santa Cruz planning director of the discovery unless no human remains have been discovered, in which case the property owner shall notify only the planning director; and
   d. Grant permission to all duly authorized representatives of the sheriff-coroner and the planning director to enter onto the property and to take all actions consistent with this section.
3. Coroner's Action on Discovery of Remains. If human remains are discovered, the Sheriff-Coroner or his/her representative shall promptly inspect the remains to determine the age and ethnic character of the remains, and shall promptly, after making such determinations, notify the planning director.
4. Planning Director's Action on Discovery of Artifacts or Remains. If any artifacts or remains are discovered, the planning director shall cause an on-site inspection of the property to be made. The purpose of the inspection shall be to determine whether the discovery is of an archaeological resource or cultural resource.

If remains have been discovered, the planning director shall consult the sheriff-coroner before making his/her determination. In making a determination, the planning director may also consult with Native American groups, qualified archaeologists, or others with the necessary expertise.

5. Discovery Not an Archaeological/Cultural Resource. Upon determining that the discovery is not of an archaeological/cultural resource, the planning director shall notify the property owner of such determination and shall authorize the resumption of work.
6. Discovery an Archaeological/Cultural Resource. Upon determining that the discovery is of an archaeological/cultural resource, the planning director shall notify the property owner that no further excavation or development may take place until a mitigation plan or other measures have been approved by the director the protection of the site.
7. Mitigation Plan. The property owner or his/her agent shall prepare any required mitigation plan. The mitigation plan shall include conditions necessary or appropriate for the protection of the resource including, but not limited to, conditions on the resumption of work, redesign of the project, or other conditions deemed appropriate by the planning director. The director shall review the mitigation plan and may consult with Native Americans, archaeologists, or other interested persons, to insure proper protection of the resource. When the director is satisfied that the mitigation plan is adequate, the director shall authorize the resumption of work in conformance with the mitigation plan.
8. Referral to Historic Preservation Commission. The planning director may refer to the historic preservation commission the decision whether the discovery is of an archaeological/cultural resource and the decision whether the mitigation plan is adequate to protect the resource. If the director refers the matter to the historic preservation commission, a public hearing shall be held in conformity with the requirements of this title relating to public, hearings.
9. Development on Known Archaeological Sites. No building permit for any earth-disturbing activity shall be issued on parcels identified by resolution of the city council as containing known cultural or archaeological resources, without the owner first obtaining an administrative use permit. The administrative use permit shall be conditioned with appropriate archaeological survey and mitigation procedures such as those prescribed in the Historic Preservation Element and the Local Coastal Land Use Plan.
10. Archaeological Reconnaissance. The city may conduct archaeological reconnaissance on any parcel in the city of Santa Cruz, at the request of or with the consent of the property owner. The city may also as a condition of any permit issued pursuant to this title or as a condition of any building permit issued pursuant to the Santa Cruz Municipal Code, require that an archaeological reconnaissance be conducted on any parcel in the city of Santa Cruz, whenever such requirement is in furtherance of the purposes of this chapter. A fee for such reconnaissance shall be charged to the applicant or property owner as established by resolution of the city council. (Chapter 24.12.430, Ord. 86-13 § 6, 1986: Ord. 85-05 § 1 [part], 1985).

#### 1.3.4.2 Santa Cruz City Historic Building Survey

Cultural resources and landmarks in the City are under the aegis of the Planning and Community Development Department, City of Santa Cruz. The City maintains a list of Historic Landmarks, as well as other built historic resources, in the Historic Building Survey. Historic Landmark is defined in Part 5: Historic Preservation within the Community Design Chapter, as "an individual structure or other feature, or group of structures on a single lot or site, or a site having special aesthetic, cultural, architectural, or engineering interest or value of an historical nature as a 'landmark'" (Municipal Code Section 24.12.420, amended by Ordinance No. 2003-14, effective April 22, 2003).

In order to become a Historic Landmark, or to be placed on the Historic Building Survey, a property must first be evaluated for local historic significance based on the following criteria (Municipal Code Section 24.12.440, amended by Ordinance No. 2003-14, effective April 22, 2003):

c. The property is either a building, site, or object that is:
   1. Recognized as a significant example of the cultural, natural, archaeological, or built heritage of the city, state, or nation
   2. Associated with a significant local, state, or national event
   3. Associated with a person or persons who significantly contributed to the development of the city, state, or nation
   4. Associated with an architect, designer, or builder whose work has influenced the development of the city, state, or nation
   5. Recognized as possessing special aesthetic merit or value as a building with quality of architecture and that retains sufficient features showing its architectural significance
   6. Recognized as possessing distinctive stylistic characteristics or workmanship significant for the study of a period, method of construction, or use of native materials
   7. Retains sufficient integrity to accurately convey its significance

The district is:

8. Recognized as a geographically definable area possessing a significant concentration of buildings that are well designed and other structures, sites, and objects which are united by past events or by a plan or physical development
9. Recognized as an established and geographically definable neighborhood united by culture, architectural styles or physical development

#### 1.3.4.3 Santa Cruz City Historic Districts

The City recognizes two historic districts and several potential historic districts. A City Historic District is evaluated and defined by the following criteria (Municipal Code Section 24.06.120, amended by Ordinance No. 85-05, effective 1985):

1. The proposed historic district is a geographically definable area possessing a significant concentration or continuity of sites, buildings, structures, or objects unified by past events, or aesthetically by plan or physical development
2. The collective value of the historic district taken together may be greater than the value of each individual structure
3. The proposed designation is in conformance with the purpose of the city's historic preservation provisions, set forth in Section 24.12.400 of this title and the city's Historic Preservation Plan and the General Plan

#### 1.3.4.4 Historic Property Zoning Incentives Ordinance

As described by the City of Santa Cruz Department of Planning and Community Development, the Historic Property Zoning Incentive Ordinance (Ord. No. 2012-19) was adopted in December 2012 to expand existing zoning variations for use by individual buildings or properties listed on the Historic Building Survey or contributing buildings or properties situated within a recognized City Historic District. The ordinance permits several Variations to Development Standards to benefit previously listed properties and incentivize owners of eligible, unlisted properties to participate in local historic preservation efforts. Additionally, these Variations help to ensure that new construction and alterations to existing historic properties within these areas conform to standards that will maintain the integrity of the City's historic landmarks, buildings, sites, objects, and contributing buildings within designated and recognized districts.

#### 1.3.4.5 Historic Alteration and Demolition Permits

Regarding effects on federal and locally significant properties, the Santa Cruz Municipal Code states the following:

> Historic Alteration Permit: The purpose of this permit is to ensure that new construction and alterations are allowed in a manner which retains the integrity of the city's historic landmarks, buildings, sites and districts over time. Administrative historic alteration permits may be approved by the zoning administrator, without a public hearing, for minor alteration projects and accessory structures. Historic alteration permits may be approved by the city historic preservation commission, after a public hearing, for non-minor alteration projects. Such a permit is required before any person shall carry out or cause to be carried out, on the site of a designated landmark, or on the site of a building listed in the City of Santa Cruz Historic Building Survey, or on the site of a structure in an historic overlay district, any material change in exterior appearance of any such site or structure through alteration, construction or relocation. This section of the Zoning Ordinance is also part of the Local Coastal Implementation Plan (Section 24.08.900).

Historic Demolition Permit: The purpose of this permit is to ensure that no person shall demolish or cause to be demolished any building listed on the Santa Cruz Historic Building Survey, any designated historic landmark or any building in an historic overlay district without approval of an historic demolition permit (Section 24.08.1000

#### 1.3.4.6 City of Santa Cruz General Plan 2030

The City of Santa Cruz General Plan 2030 outlines policies to ensure that archaeological, paleontological and built environment resources are safeguarded from the impacts of development within the City by establishing a clear framework for updating cultural sensitivity maps, inventories and zoning ordinances. The document also identifies a third type of cultural resource: historic businesses and enterprises present in the City, called a Traditional Cultural Property, or "TCP".

#### 1.3.4.7 City of Santa Cruz Local Coastal Program, 1994-2005

The City of Santa Cruz Local Coastal Plan, 1994-2005 includes a Cultural Resources Element that outlines the policies and programs to ensure the proper treatment of cultural resources located near the coastal areas of the City.

## 1.4 Project Personnel

**Archaeological Resources:** John Schlagheck is an archaeologist with 9 years cultural resources management experience along California's Central Coast with a focus on the greater Monterey Bay and San Francisco Bay areas. Mr. Schlagheck acts as principal investigator, field director, and project manager for projects under local, state

(CEQA), or federal (Section 106) regulations. He meets the Secretary of the Interior's Standards for prehistoric and historical period archaeology and his extensive work experience includes Phase I survey, Phase II evaluation, and Phase III data recovery projects.

**Built Environment Resources:** Fallin Steffen is an Architectural Historian with 5 years of professional experience in historic preservation, architectural conservation, and cultural resource management in the Monterey Bay Area and Northern California. Ms. Steffen's professional experience encompasses a variety of projects for local agencies, private developers, and homeowners in both highly urbanized and rural areas, including reconnaissance- and intensive-level surveys, preparation of resource-appropriate and city-wide historic contexts, and historical significance evaluations in consideration of the NRHP, CRHR, and local designation criteria. Ms. Steffen meets the Secretary of the Interior's Professional Qualification Standards for Architectural History. She is experienced with interdisciplinary projects spanning private and public development, transportation, and water infrastructure, and maintains experience forming educational sessions about the identification of and best practices for the preservation of historic resources.

Kathryn Haley is a senior architectural historian with 18 years of professional experience in historic/cultural resource management. Ms. Haley has worked on a wide variety of projects involving historic research, field inventory, and site assessment conducted for compliance with Section 106, NEPA, and CEQA. Ms. Haley specializes in California Register of Historical Resources (CRHR), the National Register of Historic Places (NRHP), evaluations of built environment resources, including water management structures (levees, canals, dams, ditches), buildings (residential, industrial, and commercial), and linear resources (railroad alignments, roads, and bridges). She specializes in managing large-scale surveys of built environment resources including historic district evaluations. She has prepared numerous Historic Resources Evaluation Reports (HRERs) and Historic Property Survey Reports (HPSRs) for the California Department of Transportation (Caltrans). Ms. Haley also worked on the California High-Speed Rail, San Jose to Merced, and Central Valley Wye Project Sections, leading the built environment survey, conducting property specific research, preparing the Draft Historic Architectural Survey Report (HASR), and co-authoring the environmental section for Cultural Resources. She meets the Secretary of the Interior's Professional Qualification Standards for historian and architectural historian. Ms. Haley has also assisted in preparation of Historic Properties Inspection Reports (condition assessments) under the direction of the Naval Facilities Engineering Command (NAVFAC) in accordance with Section 106 and Section 110 of the National Historic Preservation Act. Moreover, Ms. Haley has served as project manager, coordinator, historian, and researcher for a wide variety of projects. She is also experienced in the preparation of National Register nominations and Historic American Building Survey (HABS), Historic American Engineering Record (HAER), and Historic American Landscape Survey (HALS) documents

## 1.5 Study Scope Limitations

The Proposed Project includes modifications to the City's existing pre-1914 and post-1914 appropriative water rights which are described in Section 1.2.2. Water Rights Modifications. Overall, implementation of these modifications would provide the City greater flexibility in the operation of the water system while enhancing stream flows for local anadromous fisheries. The water rights modifications would not directly result in construction activities that could impact cultural (archaeological or built environment) resources. Therefore, while the water rights modifications component of the Proposed Project is not evaluated in detail in this report, the impact analysis is Section 6 (Impacts Analysis) does address this project component.

In addition to Beltz ASR facilities, the Proposed Project also includes new ASR facilities that could be installed elsewhere within the Santa Cruz Mid-County Groundwater Basin inside or outside the City's service area, and in the Santa Margarita Groundwater Basin outside the City's service area. This component of the Proposed Project is described in detail in Section 1.2.3. Water Supply Augmentation Components. Given that there are not identified locations for these facilities at this time, specific cultural resources data cannot be gathered and existing conditions cannot be established for such new facility sites. However, the programmatic analysis provided in this report addresses these sites, to the extent possible, as further described in Section 1.6 below.

## 1.6 Project Study Area Components and Area of Potential Effect

The study area for cultural resources takes into account the noncontiguous infrastructure component sites located within Santa Cruz County, as identified in Table 3 below and illustrated on Figure 4. Cultural resources investigations for the overarching study area component sites are provided at a programmatic level in most cases given the early conceptual planning information that is available for most components; however the Beltz ASR component is evaluated at a project level. The programmatic analysis identifies existing cultural resources within the infrastructure component sites, where specific sites are known, and provides mitigation should resources be identified or discovered when programmatic components are implemented in the future.

Additionally, discontiguous areas of potential effect (APEs) have also been prepared for archaeological and built environment cultural resources where the infrastructure component may involve a federal undertaking associated with a federal permit and/or funding, as such federal involvement requires completion of the Section 106 of the NHPA. The APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties. Determination of the APE is influenced by a project's setting, the scale and nature of the undertaking, and the different kinds of effects that may result from the undertaking (36 CFR 800.16(d)).

The APEs presented in Figures 4a, 4b, 4c, 4b, 4h, and 4i follow the maximum possible area of potential effects resulting from the Proposed Project. The APEs encompass 6 of the 11 infrastructure components where a federal nexus is anticipated. The designation of these APEs assumes that all construction activities will be confined to the six project components. The vertical APE is 8 feet; however, the depth of the new Beltz 9 ASR monitoring well will be 300 feet. Also, the depth of the retrofitted wells will be 210 feet at the Beltz 8 ASR site, 230 feet at the Belts 9 ASR site, 362 feet at the Beltz 10 ASR site, and 650 feet at the Beltz 12 ASR site. The area of the greater depth at the well sites is less than two square feet.

It is important to note that all Proposed Project areas were reviewed for potential built environment resources (previously recorded and those that might require recordation and evaluation). All built environment properties that required formal CEQA significance evaluation were completed as part of this report. Eligibility evaluations, finding recommendations, and impacts are addressed in this report.

## Table 3. Approach to Cultural Resources

| Study Area Components | CEQA Environmental Review Level | Section 106 Level Analysis/APE delineated | New Facility or Upgrade to Existing Facility | Age of Built Environment Structures | Figure Number (Appendix A) |
|---|---|---|---|---|---|
| *Water Rights Modifications* | | | | | |
| No impact to cultural resources | | | | | |
| *Water Supply Augmentation Components* | | | | | |
| ASR Facilities | | | | | |
| New ASR Facilities | Programmatic | No | New | Exact sites unknown at this time | NA |
| Beltz 8 ASR Facility | Project | Yes | Upgrade | 1971 facility modification 1985, 1998 | 4a |
| Beltz 9 ASR Facility | Project | Yes | Upgrade | 1998 | 4b |
| Beltz 10 ASR Facility | Project | Yes | Upgrade | 2004 | 4c |
| Beltz 12 ASR Facility | Project | Yes | Upgrade | 2012 | 4d |
| City/SVWD Intertie – New Pipeline and Pump Station | Programmatic | No | New | Proposed all new components; no existing structures | 4e |
| City/SqCWD/CWD Intertie - Soquel Village Pipeline | Programmatic | No | Upgrade | Existing pipeline, likely over 45 years old | 4f |
| City/SqCWD/CWD Intertie - Park Avenue Pipeline and McGregor Drive Pump Station Upgrade | Programmatic | No | Upgrade | Existing pipeline, likely over 45 years old | 4f |
| City/SqCWD/ CWD Intertie - Freedom Boulevard Pump Station | Programmatic | No | New | Proposed all new components; no existing structures | 4g |
| City/SqCWD/ CWD Intertie - Valencia Drive Pump Station | Programmatic | No | New | Proposed all new components; no existing structures | 4g |
| *Surface Water Diversion Improvements* | | | | | |
| Felton Diversion Improvements | Programmatic | Yes | Upgrade | 1976 | 4h |
| Tait Diversion and Coast Pump Station Improvements | Programmatic | Yes | Upgrade | c.1934, altered 1961 and 1984 (Tait Diversion) 1929 (Coast Pump Station) | 4i |

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# 2 Background Research

## 2.1 CHRIS Records Search

In order to identify historic properties located within the study area that might be affected by the Proposed Project, Dudek defined records search areas that includes the discontiguous study area components or points and a 0.25-mile buffer around those delineations for previously recorded resources and cultural reports. On April 27, 2020, Dudek received results of the records search conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) at Sonoma State University (NWIC File No. 19-1728). The records search also included a review of the NRHP, CRHR, California Inventory of Historic Resources, historical maps, and local inventories. The results of the Confidential Record Search are included in **Appendix B.**

### 2.1.1 Summary of Records Search Findings for the Project Study Area

**Previous Technical Studies**

The records search results indicated 21 previously conducted studies with some coverage reported within the Study Area (Table 4) and 82 previously conducted studies within the 0.25-mile buffer of the study area (**Appendix A**, Figure 4).

**Table 4. Previously Conducted Cultural Resources Technical Studies within the Study Area**

| Report No. | Authors | Year | Title | Publisher |
|---|---|---|---|---|
| S-003913 | William Roop, Leo Barker, and Charlene Detlefs | 1977 | Cultural Resource Inventory of the Scotts Valley Wastewater Project Service Area | Archaeological Resource Service |
| S-003913a | Leo Barker and Charlene Detlefs | 1977 | Historical Synopsis and Site Inventory of Scotts Valley | |
| S-003964 | Ann S. Peak & Associates | 1977 | Santa Cruz Regional Wastewater Treatment System Project, Santa Cruz County, California | Ann S. Peak & Associates |
| S-003995 | Mara Melandry | 1979 | Archaeological Survey Report, 04-SCr-1, P.M.10.2/15.8, 04223 - 380331, Landscaping Project in Santa Cruz County | Caltrans, District 04 |
| S-004005 | David Chavez | 1979 | Cultural Resources Assessment of the Pasatiempo/Rollingwoods Wastewater Project Locations, Santa Cruz County, California | |
| S-004100 | Diane C. Watts | 1980 | Archaeological Survey Report, 04-SCr-17 2.0/2.4, Proposed Median Closure and Shoulder Widening along Route 17, near Sims Road, Santa Cruz County, 04217-101700 | California Department of Transportation |
| S-008134 | Stephen A. Dietz | 1986 | Report of Archaeological Investigations for the Proposed Christian Life Center Church Facility, La Madrona Drive, Santa Cruz County, California, APN 67-183-53 and 67-351-06 | Archaeological Consulting and Research Services Inc. |

## Table 4. Previously Conducted Cultural Resources Technical Studies within the Study Area

| Report No. | Authors | Year | Title | Publisher |
|---|---|---|---|---|
| S-009497 | Terry Jones | 1987 | Archaeological Survey Report for the Proposed Signal Installation and Ramp Widening at the Park Avenue Interchange on Highway 1, City of Aptos, Santa Cruz County | Caltrans, District 4 |
| S-009497a | Terry Jones | 1988 | Historic Properties Survey Report for the Proposed Signal Installation and Ramp Widening at the Park Avenue Interchange on Highway 1 City of Aptos, Santa Cruz County | Caltrans, District 4 |
| S-012082 | Robert Cartier | 1990 | Cultural Resource Evaluation for Gateway South Assessment District in the City of Scotts Valley, County of Santa Cruz | Archaeological Resource Management |
| S-017870 | Mara Melandry | 1996 | Historic Property Survey Report and Finding of No Effect, 04-SCR-1, PM 9.2/16.6, 04229-135331, Proposed Pavement Overlay and Other Minor Improvements on Portions of Highway 1 in the Cities of Aptos, Soquel, Capitola and Santa Cruz in Santa Cruz County | Caltrans District 04 |
| S-017870a | Mara Melandry | 1996 | Archaeological Survey Report for a Proposed Pavement Overlay and Drainage Improvements on Portions of Highway 1 in the Cities of Aptos, Soquel, Capitola and Santa Cruz in Santa Cruz County, 04-Scr-01 PM 9.2/16.6 04229-135331 | Caltrans |
| S-024487 | Mary Doane and Trudy Haversat | 2001 | Preliminary Archaeological Reconnaissance for the Proposed SCMTD Metrobase Facility, on Encinal and River Streets in Santa Cruz, Santa Cruz County, California | Archaeological Consulting |
| S-024487a | Mary Doane and Trudy Haversat | 2002 | Preliminary Archaeological Reconnaissance for a Proposed SCMTD Metrobase Facility, on River Street and Golf Club Drive in Santa Cruz, Santa Cruz County, California | Archaeological Consulting |
| S-035956 | Matthew R. Clark | 2008 | Aptos Transmission Main Relocation Project, National Historic Preservation Act Section 106, Historic Resources Inventory and Subsurface Reconnaissance Plan for Archaeological Resources | Holman & Associates |
| S-035956a | Charlene Duval, Sandy Lyndon, and Carolyn Swift | 2008 | Historic Research and Context for Potential Archaeological Sensitivity for the Aptos Transmission Main Relocation Project | Holman & Associates |
| S-035956b | Matthew R. Clark | 2009 | Aptos Transmission Main Relocation Project, National Historic Preservation Act Section 106, Subsurface Reconnaissance for Archaeological Resources, Historic Resources Inventory, and Historic Properties Management Plan | Holman & Associates |
| S-035956c | Matthew R. Clark, Sunshine Psota, and Patricia Paramoure | 2013 | Aptos Transmission Main Relocation Project: Final Report. Section I: Archaeological Monitoring of Construction and Completion of National Historic Preservation Act Section 106 Compliance; Section II: Historic Artifact Processing, Analysis, and Interpretation. | Holman & Associates |

## Table 4. Previously Conducted Cultural Resources Technical Studies within the Study Area

| Report No. | Authors | Year | Title | Publisher |
|---|---|---|---|---|
| S-037509 | Damon M. Haydu | 2010 | Cultural Resources Inventory for the Harvey West Segment of the North Coast System Rehabilitation Project, City of Santa Cruz, Santa Cruz County, California. | Applied EarthWorks Inc. |
| S-047397 | Patricia Mikkelsen, Julia Costello, Jerome King, Charlene Duval, Edna Kimbro, and John Berg | 2005 | Archaeological Survey Report for the Highway 1 High Occupancy Vehicle Lane Widening Project, Santa Cruz, California, SCR-1 PM R7.6/16.8 (KP R12.22/27.02), EA 05-0C7300 | Far Western Anthropological Research Group Inc.; Foothill Resources Ltd. |
| S-047397a | Patricia Mikkelsen | 2010 | First Supplemental Archaeological Survey Report for the Highway 1 High Occupancy Vehicle Lane Widening Project, Santa Cruz, California, 05-SCR-1 PM R7.24/16.13 (KP R11.67/25.96), EA 05-0C7300 | Far Western Anthropological Research Group Inc. |

### *Previously Conducted Cultural Resources Technical Studies within the Study Area*

#### S-003913 and S-003913a

This series of reports included the results of a large area general reconnaissance that covered all of the Scotts Valley wastewater service area, including all of the City of Scotts Valley and some areas adjacent areas within Santa Cruz County (Roop et al. 1977). The coverage therefore included the City/SVWD intertie component of the study area. The effort resulted in the recording of numerous new prehistoric and historical period resources, none of which are in the area of the City/SVWD intertie component.

#### S-003964

S-003964 is a report from a large area general reconnaissance for improvements to the Santa Cruz regional wastewater treatment system (Peak 1977). The coverage area for the reconnaissance traversed the area of Santa Cruz, Live Oak, Soquel and as far south as Watsonville, and included several components of the study area.

#### S-003995

This report is the result of a roadside survey of Highway 1 for an extensive landscaping project (Melandry 1979). The survey intersected the City/SqCWD/CWD intertie - Park Avenue pipeline component of the study area. Melandry discussed several known sites adjacent to Highway 1 and reported a new prehistoric site (CA-SCR-214) adjacent to this pipeline component. Jones (1987a; S-009497) conducted subsurface testing at the site location with negative results.

#### S-004005

S-004005 reports findings from a general surface reconnaissance for new pipelines and facility improvements to the Pasatiempo/Rollingwood Wastewater Treatment System (Chavez 1979). The reconnaissance covered a large area between Pasatiempo and Scotts Valley and included the City/SVWD intertie component of the study area.

S-004100

This report includes cultural resources findings from a Caltrans report on access changes to Highway 17 between Pasatiempo and Scotts Valley (Watts 1980). The survey coverage included the south portion of the City/SVWD intertie component of the study area. No new resources were reported.

S-008134

S-008134 is a parcel level survey of 15.3 acres for a proposed church on La Madrona Drive (Dietz 1986). The location of the proposed development was several hundred feet west of the City/SVWD intertie component. After finding a few chert flakes and trace marine shell remains, Dietz completed over 30 auger probes and one 1 X 1 meter test unit to 90 cm. Findings suggested that the identified shell deposit was not of archaeological origin and the chert flakes were too sparse to justify recording them as a site.

S-009497 and S-009497a

This document is a Caltrans cultural resources report for a project to install signal and ramp improvements at the Highway 1/Park Avenue interchange (Jones 1987a) within the City/SqCWD/CWD intertie - Park Avenue pipeline component of the study area. The archaeological work included intensive surface reconnaissance and subsurface testing (hand augering) within the mapped boundaries of CA-SCR-214, as recorded by Melandry (1979; S-003995). Summarizing his results Jones wrote, “The absence of midden or other archaeological indicators and the extremely low density of shellfish remains indicates that the materials recorded as CA-SCR-214 *do not* in fact constitute an archaeological site” (Jones 1987a: 11 [emphasis added])

S-012082

Cartier (1990) conducted a records search and surface reconnaissance on two acres of property surrounding the Highway 17/Mt. Hermon Road Interchange. The location intersects the extreme north portion of the City/SVWD intertie component of the study area. The reported results were uniformly negative.

S-017870 and S-017870a

These two reports include a historic property survey and an archaeological survey conducted for minor improvements to Highway 1 (Melandry 1996a, 1996b). The coverage area reported in the document included the City/SqCWD/CWD intertie - Park Avenue pipeline component of the study area. Melandry concluded there were no historic properties affected by the proposed improvements.

S-024487 and S-024487a

This series of reports includes archaeological survey coverage for two alternative locations for a new Santa Cruz Metro operations center. S-024487 is for a location not within the study area. S-024487a includes survey coverage of the property immediately south of and possibly slightly overlapping the Tait Diversion and Coast Pump Station component of the study area (Doane and Haversat 2002). They findings were uniformly negative for cultural resources.

S-035956 and S-035956a, b, and c

This series of reports covers four elements of a Section 106 cultural resources compliance effort for the relocation of the Aptos transmission main, a project that included a small portion of the City/SqCWD/CWD intertie - Park Avenue pipeline component of the study area. Specifically, the reports include a historic inventory (Clark 2008), historic context (Duval et al. 2008), subsurface testing report (Clark 2009), and final monitoring report (Clark et al.

2013). While 16 historical period features and 21 historical period isolates were reported for the project in the final monitoring report, none were within or near the Park Avenue pipeline component.

S-037509

Haydu (2010) conducted a cultural resources assessment for a project to install a new water pipeline from the Coast Pump Station to the east terminus of High Street just west of downtown Santa Cruz. The pipeline project area therefore included the Tait Diversion and Coast Pump Station component of the study area. The report concluded that no cultural resources would be impacted by the project.

S-047397 and S-047397a

These two reports are related to a proposed widening project for Highway 1 (Mikkelsen et al. 2005; Mikkelsen 2010). The survey coverage intersects the City/SqCWD/CWD intertie - Park Avenue pipeline component of the study area. No resources were reported within the current discontiguous APEs.

Guerrero 2012 (not included in NWIC records search results)

Guerrero (2012) conducted a records search and surface survey of the entire City/SVWD intertie for NHPA Section 106 and CEQA level environmental review. Results of the survey were negative.

### Previously Recorded Cultural Resources

There is one previously recorded resource within the study area and nine additional resources within the 0.25-mile records search buffer (Table 5). The one resource within the study area is CA-SCR-334H (P-44-000406), Highway 1 within Santa Cruz County. CA-SCR-334H is described below Table 5.

### Table 5. Previously Recorded Cultural Resources within the Study Area and 0.25-Mile Buffer

| Primary | Trinomial | Resource Name | Resource Type | Age | Attributes |
|---|---|---|---|---|---|
| *Resources within Study Area* | | | | | |
| P-44-000406 | CA-SCR-000334H | Highway 1 (Santa Cruz County) | Structure | Historic | Highway |
| *Resources within 0.25-Mile Records Search Buffer* | | | | | |
| P-44-000038 | CA-SCR-000032 | Camp Mitchell | Site | Prehistoric | Bedrock milling feature |
| P-44-000170 | CA-SCR-000168/H | Soquel Knolls | Site | Prehistoric, Historic | Lithic scatter, habitation debris, foundations/structure pads, standing structures |
| P-44-000181 | CA-SCR-000179 | DOT-04-SCR-1-1 | Site | Prehistoric | Lithic scatter, habitation debris |
| P-44-000216 | CA-SCR-000214 | Field #2 | Site | Prehistoric | habitation debris |
| P-44-000230 | CA-SCR-000228 | SCAS 79-408 #1 | Site | Prehistoric | Lithic scatter, habitation debris |
| P-44-000234 | CA-SCR-000232 | New Brighton State Beach #1 | Site | Prehistoric | Lithic scatter, habitation debris |

## Table 5. Previously Recorded Cultural Resources within the Study Area and 0.25-Mile Buffer

| Primary | Trinomial | Resource Name | Resource Type | Age | Attributes |
|---|---|---|---|---|---|
| P-44-000377 | | Southern Pacific Railroad | Structure | Historic | Railroad grades, engineering structure, bridge other |
| P-44-000855 | | Cowell Home Ranch District | District | Historic | Quarries, Single family property, ancillary building, industrial building |
| P-44-001103 | CA-SCR-000440H | Old Mill-01H | Site | Historic | Refuse scatter |

<u>CA-SCR-334H (P-44-000406)</u>

CA-SCR-334H is Highway 1 within Santa Cruz County. It includes the route and structure of the road and associated features such as culverts and other infrastructure directly related to Highway 1. Most of the associated features are located where Highway 1 is still within a rural context, such as the Davenport area north of Santa Cruz. Fewer associated features are present in relatively urban areas where a greater number of improvements have been made to Highway 1 over time. This resource trends east to west through the City/SqCWD/CWD intertie - Park Avenue pipeline component at the Highway 1/Park Avenue overpass. The Park Avenue pipeline passes under the Highway 1/Park Avenue overpass and therefore does not conflict with the built portion of the resource. There are no Highway 1 associated features at this location.

### Proximate Recorded Resources within the Study Area

Of the nine previously recorded resources within the 0.25-mile records search buffer, seven are archaeological resources and two are built environment resources. Table 6 lists the proximate archaeological resources with their location relative to the components of the study area. Table 7 lists the built environment resources with their location relative to the components of the study area.

## Table 6. Proximate Previously Recorded Archaeological Resources

| Resource | Description and Attributes | Resource Location Relative to the Components of the Study Area |
|---|---|---|
| P-44-000038 (CA-SCR-000032) | Prehistoric site; Bedrock milling feature | ~425 feet east of City/SVWD Intertie on the opposite (east) side of Highway 17 and El Rancho Drive |
| P-44-000170 (CA-SCR-000168/H) | Prehistoric site with historical period component; Lithic scatter, habitation debris, foundations/structure pads, standing structures (last reported in 1981) | ~800 feet west of City/SqCWD/CWD intertie - Soquel Village pipeline |
| P-44-000181 (CA-SCR-000179) | Prehistoric site; Lithic scatter, habitation debris | ~150 feet south of City/SqCWD/CWD intertie - Soquel Village pipeline |

## Table 6. Proximate Previously Recorded Archaeological Resources

| Resource | Description and Attributes | Resource Location Relative to the Components of the Study Area |
|---|---|---|
| P-44-000216 (CA-SCR-000214) | Prehistoric stie; Habitation debris | ~10 feet west of City/SqCWD/CWD intertie - Park Avenue pipeline |
| P-44-000230 (CA-SCR-000228) | Prehistoric site; Lithic scatter, habitation debris | ~625 feet south of Felton Diversion Site |
| P-44-000234 (CA-SCR-000232) | Prehistoric site; Lithic scatter, habitation debris | ~950 feet south of City/SqCWD/CWD intertie - Park Avenue pipeline |
| P-44-001103 (CA-SCR-000440H) | Historical period archaeological site (mill); Refuse scatter | ~500 feet north of City/SqCWD/CWD intertie - Soquel Village pipeline |

The two archaeological resources that are close enough to a study area component to be of concern are CA-SCR-179 (P-4400181) and CA-SCR-214 (P-44-000216). However, both resources have been the subject of subsurface testing and found to be deposits of extremely low integrity or deposits that do not warrant consideration as archaeological sites as described below.

### CA-SCR-179 (P-44-000181)

CA-SCR-179 was first recorded in 1979 as prehistoric site with fire-affected rock, chert tools, groundstone and shell midden. Jones (1987b) conducted a survey and test excavation at the site and found very sparse remains that he attributed to a secondary deposit of relocated midden soil.

### CA-SCR-214 (P-44-000216)

Jones (1987a) tested CA-SCR-000214 with 10 hand augers and found two small fragments of shell weighing 0.2 grams and no other prehistoric material. The researchers determined that the remains "do not constitute and intact prehistoric deposit" (Jones and Kelly 1987: 5) and attributed the shell to either a redeposit event or modern activity.

## Table 7. Proximate Previously Recorded Built Environment Resources

| Resource | Description and Attributes | Resource Location Relative to the Components of the Study Area |
|---|---|---|
| P-44-000337 | Santa Cruz Branch Line; Railroad grades, engineering structure, bridge | ~150 feet southeast of the City/SqCWD/CWD intertie - Park Avenue pipeline;<br>~250 feet north of Beltz 8 ASR Facility; and<br>~500 feet south of Beltz 10 ASR Facility |
| P-44-000855 | Cowell Home Ranch Historic District; Quarries, Single family property, ancillary building, industrial building | ~850 feet west of the Tait Diversion and Coast Pump Station site |

### 2.1.2 Summary of Records Search Findings for the Project APEs

Of the nine resources proximate to the study area, three are proximate to components of the APEs as shown in Tables 6 and 7 above. Specifically, the prehistoric site P-44-000230 (CA-SCR-228) is approximately 625 feet south of the Tait Diversion and Coast Pump Station component; P-44-000337, the Santa Cruz Branch Line is approximately 150 feet southeast of the Santa Cruz/SqCWD/CWD intertie - Park Avenue pipeline and about 250 feet and 500 feet from Beltz 8 ASR and Beltz 10 ASR components, respectively; and P-44-000855, the Cowell Home Ranch Historic District is approximately 850 west of the Tait Diversion and Coast Pump Station component of the APE.

## 2.2 Native American Coordination

**Native American Information Outreach**

On March 31, 2020, Dudek sent a request to NAHC for a search of their Sacred Lands File (SLF) for the vicinity of the APE. The SLF is a list of properties important to Native American tribes. On April 1, 2020, Dudek received a letter from the NAHC with **positive** findings from the SLF search with the Costanoan Ohlone Rumsen-Mutsun Tribe listed as the tribal contact in this case. NAHC also provided a list of Native American contacts that might have local knowledge of cultural and tribal cultural resources near the study area.

In order to obtain any relevant information from local tribes, Dudek sent letters via mail and email to all five of the Native American contacts provided by the NAHC on April 6, 2020. On April 7, 2020, Valentin Lopez, Chair of the Amah Mutsun Tribal Band, contacted Dudek. Mr. Lopez requested that a Native American monitor from the Amah Mutsun Tribal Band be hired for all ground-disturbance work within 400 feet of known cultural resource sites. No additional Native American contacts have responded to the outreach letters as of June 4, 2020. A complete record of the Native American outreach effort is included in **Appendix C**.

**CEQA AB 52 Consultation**

The CEQA lead agency for consultation with local Native American tribes is the City of Santa Cruz. At the time of this report, the City has not received any AB 52 requests from local tribes. The agency regulatory contact for the consultation is Ms. Sarah Easley Perez, Santa Cruz Water Department, 212 Locust Street, Suite C, Santa Cruz, CA 95060, (831) 420-5327; seasleyperez@cityofsantacruz.com.

**NHPA Section 106 Consultation**

At the time of application to the U.S. Army Corps of Engineers (USACE) for necessary federal entitlements, USACE will be the federal lead agency for compliance with NHPA Section 106 regulations. As part of the application review, USACE will likely conduct a new SLF search and the required Section 106 Native American consultation through the Native American Heritage Commission directly from the USACE District office in San Francisco. The USACE regulatory contact for the Native American consultation will be determined at that time.

# 2.3 Historic Advocacy Correspondence

On June 2nd, 2020 Dudek, Architectural Historian, Fallin Steffen, sent electronic contact letters to the Santa Cruz Museum of Art and History, the Santa Cruz Museum of Natural History, the San Lorenzo Valley Museum, the Capitola Historical Museum, and the Pajaro Valley Historical Association. The letters briefly described the Proposed Project and requested information about cultural resources near the project area.

Felicia Van Stolk, from the Santa Cruz Museum of Natural History responded on June 3, 2020 and recommended that Dudek reach out to the Amah Mutsun Tribal Band as the Proposed Project is located within their territory. As detailed in Section 2.2 Native American Outreach, Dudek contacted the Amah Mutsun Tribal Band on April 6, 2020 and received a reply on April 7, 2020 from Valentin Lopez, Chair of the Amah Mutsun Tribal Band requesting the need for a Native American monitor from the Amah Mutsun Tribal Band be hired for all ground-disturbance work within 400 feet of known cultural resource sites. A complete record of the Native American outreach effort is included in **Appendix C.**

Lou Arbanas, a volunteer with the Pajaro Valley Historical Association responded on June 3, 2020 that the association did not have knowledge of anything within the Study Area.

Copies of other interested party correspondence are located in **Appendix D.**

# 2.4 Building Development and Archival Research

Dudek conducted additional background research to arrive at a general understanding of the settlement and development of the Proposed Project area. Below is a summary of research efforts.

**Santa Cruz Public Library**

Dudek staff viewed digital source material related to the development of water infrastructure in Santa Cruz County. The materials reviewed during this visit were used in the preparation of Section 3: Historic Context and Section 5: Significance Evaluation of this report.

**Santa Cruz Water Department Archives**

Santa Cruz Water Department staff provided Dudek with a selection of materials related to the development of water infrastructure in Santa Cruz County. These materials were incorporated throughout this report and used in the preparation of Section 3: Historic Context and Section 5: Significance Evaluation of this report.

**Historical Newspaper Review**

Dudek reviewed historical newspapers from Santa Cruz covering the development of water infrastructure in Santa Cruz County, in an effort to understand the development of the system overall. These documents were used in the preparation of Section 3: Historic Context and Section 5: Significance Evaluation of this report.

### Historical Sanborn Map Review

A review of historical Sanborn Map Company fire insurance maps covering the City of Santa Cruz was conducted as part of the archival research effort for the Proposed Project from the following years: 1888, 1892, 1905, 1928, and 1928-1950*.

### Historical Aerial Photographs

A review of historical aerial photographs was conducted as part of the archival research effort for the Proposed Project from the following years: 1931, 1940, 1948, 1952, 1964, 1968, 1982, 1993, 2005, 2009, 2010, 2012, 2014, and 2016 (NETR 2020; UCSB 2020).

# 3 Historic Context

The following historic context addresses relevant themes concerning the history of the water delivery infrastructure in the County. It begins with a pre-historic and ethnographic overview of the County, followed by a discussion of the initial development of the County, then a comprehensive overview of the three phases of City water development. This section then concludes with a discussion of the historical development of some of the smaller, outlying water districts in the County including SLVWD, SVWD, SqCWD, and CWD.

## 3.1 Environmental Context

The study area includes 11 discontinuous components all lying between 50 and 550 feet above mean sea level between the north shore of Monterey Bay and the Santa Cruz Mountains. The area is traversed by numerous rivers and drainages that trend south from the mountains to the bay. The greater study area includes several vegetation regimes, including the redwood forest regime dominated by redwood (*Sequoia sempervirens*), the hardwood forest regime, and the coastal prairie-scrub mosaic (Küchler 1977). The Natural Resources Conservation Service maps show nine soil types within the greater study area (SoilWeb 2020). Geology of the Study Area is largely marine and nonmarine sedimentary rock of the Miocene, Pleistocene, and Holocene and plutonic rocks of the Mesozoic (USGS 2020). The region has a Mediterranean climate, with warm dry summers and cool wet winters.

## 3.2 Prehistory

The Project lies within the territory that was occupied by the Costanoan or Ohlone people prior to European contact. The term Costanoan refers to people who spoke eight separate Penutian-stock language groups and lived in autonomous tribelet communities between the vicinities of the City of Richmond in the north to Big Sur in the south. The Awaswas tribelet occupied the Santa Cruz area at the time of European contact (Levy 1978).

New information regarding the lifeways of pre-contact Californians is elucidated through continued ethnographic and archaeological studies. Early European explorers between the 16th and 18th centuries provided the first written descriptions about the native Californians they encountered, although details are sparse. Attempts at systematic ethnographies did not occur until the early 20th century, generations after the effects of missionization and integration had altered Costanoan/Ohlone lifestyles drastically. Many of the studies, such as those conducted by John P. Harrington (1942) and C. Hart Merriam (1967), focused on recording Native languages before they fell into disuse. Information from the archaeological record continues to fill in the gaps of prehistoric lifeways. Archaeologists extrapolate trends in tool use, trade, diet and migration from studies of archaeological sites. Costanoan/Ohlone descendants are often invited to participate in decisions about treatment of their ancestral sites and to educate others about their traditional lifeways.

New archaeological finds continue to fill in the gaps of our understanding of prehistoric lifeways. Jones et al. (2007) presents a synthetic overview of prehistoric adaptive change in the central coast. This temporal framework for the prehistoric era of the greater central California coast spans a period of approximately the last 10,000–12,000 years, a period known as the Holocene, and divides that span into six different periods. Researchers distinguish these periods by perceived changes in prehistoric settlement patterns, subsistence practices, and technological advances. These adaptive shifts are recognized by differences in temporally discrete artifact assemblages, site locations, and site types. Table 8 summarizes the cultural chronology presented by Jones et al. (2007).

## Table 8. California Central Coast Chronology

| California Central Coast Chronology | |
|---|---|
| *Temporal Period* | *Date Range** |
| Paleo-Indian | pre-8000 cal BC |
| Millingstone (or Early Archaic) | 8000 to 3500 cal BC |
| Early | 3500 to 600 cal BC |
| Middle | 600 cal BC to cal AD 1000 |
| Middle-Late Transition | cal AD 1000-1250 |
| Late | cal AD to 1250-1769 |

Note:
* Following Jones et al. 2007.

### Paleo-Indian

The Paleo-Indian era represents people's initial occupation of the region and is quite sparse across the Monterey Bay region. Evidence of this era is generally found through isolated artifacts or sparse lithic scatters (Bertrando 2004). Farther south, in the San Luis Obispo area, fluted points characterizing this era are documented near the town of Nipomo (Mills et al. 2005) and Santa Margarita (Gibson 1996). No fluted points have been found in the northern central coast—Monterey, Santa Cruz, and San Mateo Counties. Possible evidence for Paleo-Indian occupation is reported at CA-SCR-38/123 at Wilder Ranch (Bryne 2002) and CA-SCR-177 in Scotts Valley (Cartier 1993). The traditional interpretation of Paleo-Indian lifeways is that people were highly mobile hunters who focused subsistence efforts on large mammals. In contrast, Erlandson et al. (2007) proposes a "kelp highway" hypothesis for the peopling of the Americas. Proponents of this model argue that the earliest inhabitants of the region focused their economic pursuits on coastal resources. Archaeological sites that support this hypothesis are mainly from the Santa Barbara Channel Islands. Some scholars hypothesize that Paleo-Indian sites in the Bay Area/northern central coast region may exist but have been inundated as a result of rising ocean levels throughout the Holocene (Jones and Jones 1992).

### Millingstone

Settlement in the central coast appears with more frequency in the Millingstone Period. Sites of this era have been discovered in Big Sur (Jones 1993; Fitzgerald and Jones 1999) and Moss Landing (Jones and Jones 1992; Milliken et al. 1999). Assemblages are characterized by abundant millingstones and handstones, cores and core-cobble tools, thick rectangular (L-series) Olivella beads, and a low incidence of projectile points, which are generally lanceolate or large side-notched varieties (Jones et al. 2007). Eccentric crescents are also found in Millingstone components. Sites are often associated with shellfish remains and small mammal bone, which suggest a collecting-focused economy. Newsome et al. (2004) reported that stable isotope studies on human bone, from a Millingstone component at CA-SCR-60/130, indicate a diet composed of 70%–84% marine resources. Contrary to these findings, deer remains are abundant at some Millingstone sites (cf. Jones et al. 2008), which suggests a flexible subsistence focus. Similar to the Paleo-Indian era, archaeologists generally view people living during the Millingstone era as highly mobile.

### Early

The Early Period corresponds with the earliest era of what Rogers (1929) called the "Hunting Culture." According to Rogers (1929), the Hunting Culture continues through to what is termed the Middle-Late Transition in the present framework. The Early Period is marked by a greater emphasis on formalized flaked stone tools, such as projectile points and bifaces, and the initial use of mortar and pestle technology. Early Period sites are located in more varied environmental contexts than millingstone sites, suggesting more intensive use of the landscape than practiced previously (Jones and Waugh 1997).

Early Period artifact assemblages are characterized by large side-notched points, Rossi square-stemmed points, and spire-lopped (a), end-ground (b2b and b2c), cap (b4), and rectangular (L-series) Olivella beads. Other artifacts include less temporally diagnostic contracting-stemmed and Año Nuevo long-stemmed points and bone gorges. Ground stone artifacts are less common relative to flaked stone tools when compared with Millingstone-era sites.

Early Period sites are common and often found in estuary settings along the coast or along river terraces inland and are present in both Monterey and Santa Cruz Counties. Coastal sites dating to this period include CA-MNT-108 (Breschini and Haversat 1992a), CA-SCR-7 (Jones and Hildebrandt 1990), and CA-SCR-38/123 (Jones and Hildebrandt 1994).

Archaeologists have long debated whether the shift in site locations and artifact assemblages during this time represents either population intrusion as a result of mid-Holocene warming trends, or an in situ adaptive shift (cf. Mikkelsen et al. 2000). The initial use of mortars and pestles during this time appears to reflect a more labor-intensive economy associated with the adoption of acorn processing (cf. Basgall 1987).

### Middle

The trend toward greater labor investment is apparent in the Middle Period. During this time, there is increased use of plant resources, more long-term occupation at habitation sites, and a greater variety of smaller use-specific localities. Artifacts common to this era include contracting-stemmed projectile points, a greater variety of Olivella shell beads, and Haliotis ornaments that include discs and rings (Jones 2003). Bone tools and ornaments are also common, especially in the richer coastal contexts (Jones and Ferneau 2002a; Jones and Waugh 1995), and circular shell fishhooks are present for the first time. Grooved stone net sinkers are also found in coastal sites. Mortars and pestles become more common than millingstones and handstones at some sites (Jones et al. 2007). Important Middle Period sites include CA-MNT-282 at Willow Creek (Jones 2003; Pohorecky 1976), CA-MNT-229 at Elkhorn Slough (Dietz et al. 1988), and CA-SCR-9 and CA-SMA 218 at Año Nuevo (Hylkema 1991).

Jones et al. (2007) discussed the Middle Period in the context of Rogers's (1929) Hunting Culture because it is seen as a continuation of the pattern that begins in the Early Period. The pattern reflects a greater emphasis on labor-intensive technologies that include projectile and plant processing. Additionally, faunal evidence highlights a shift toward prey species that are more labor intensive to capture, either by search and processing time or technological needs. These labor-intensive species include small schooling fishes, sea otters, rabbits, and plants such as acorn. Jones and Haney (2005) offer that Early and Middle Period sites are difficult to distinguish without shell beads due to the similarity of artifact assemblages.

#### Middle-Late Transition

The Middle-Late Transition corresponds with the end of Rogers' (1929) Hunting Culture. Artifacts associated with the Middle-Late Transition include contracting-stemmed, double side-notched, and small leaf-shaped projectile points. The latter are thought to represent the introduction of bow and arrow technology to the region. A variety of Olivella shell bead types are found in these deposits and include B2, B3, G1, G2, G6, and K1 varieties, notched line sinkers, hopper mortars, and circular shell fishhooks (Jones 1995; Jones et al. 2007). Sites that correspond with this time are CA-MNT-1233 and CA-MNT-281 at Willow Creek (Pohorecky 1976), CA-MNT-1754, and CA-MNT-745 in Priest Valley (Hildebrandt 2006). A greater number of Middle-Late Transition sites are found in San Luis Obispo County to the south.

The Middle-Late Transition is a time that appears to correspond with social reorganization across the region. This era is also a period of rapid climatic change known as the Medieval Climatic Anomaly (cf. Stine 1994). The Medieval Climatic Anomaly is proposed as an impetus for the cultural change that was a response to fluctuations between cool-wet and warm-dry conditions that characterize the event (Jones et al. 1999). Archaeological sites are rarer during this period, which may reflect a decline in regional population (Jones and Ferneau 2002b).

#### Late

Late Period sites are found in a variety of environmental conditions and include newly occupied task sites and encampments, as well as previously occupied localities. Artifacts associated with this era include cottonwood (or canaliño) and desert side-notched arrow points, flaked stone drills, steatite and clamshell disc beads, Haliotis disc beads, Olivella bead types E1 and E2, and earlier used B2, B3, G1, G6, and K1 types. Millingstones, handstones, mortars, pestles, and circular shell fishhooks also continue to be used (Jones et al. 2007). Sites dating to this era are found in coastal and interior contexts. Late Period sites include CA-MNT-143 at Asilomar State Beach (Brady et al. 2009), CA-MNT-1765 at Moro Cojo Slough (Fitzgerald et al. 1995), CA-MNT-1485/H and CA-MNT-1486/H at Rancho San Carlos (Breschini and Haversat 1992b), and CA-SCR-117 at Davenport Landing (Fitzgerald and Ruby 1997).

Coastal sites dating to the Late Period tend to be resource acquisition or processing sites, while evidence for residential occupation is more common inland (Jones et al. 2007).

## 3.3 Historical Overview of Santa Cruz County

### 3.3.1 Spanish Period (1769–1822)

The earliest known European exploration of the Monterey Bay was a Spanish envoy mission led by Sebastián Vizcaíno in 1602. The purpose of the voyage was to survey the California coastline to locate feasible ports for shipping, and Vizcaíno had explicit instructions prohibiting the creation of settlements and interacting with local Native Americans. Finding the bay to be commodious, fertile, and extremely favorable for anchorage during eastward voyages from Manila to Acapulco, Vizcaíno named the Bay "Monterey" after the Conde de Monterey, the present Viceroy in Mexico (Chapman 1920: 293-4; Hoover et al. 2002: 225-6).

Despite being mapped as an advantageous berth for Spanish shipping efforts, the epicenter of Spanish settlement in Alta California did not make its way to the Monterey Bay until the second half of the eighteenth century. In an effort to prevent the establishment of English and Russian colonies in northern Alta California, Don Gaspar de

Portolá, the Governor of Baja, embarked on a voyage in 1769 to establish military and religious control over the area. This overland expedition by Portolá marks the beginning of California's Historic period, occurring just after King Carlos III of Spain installed the Franciscan Order to direct religious colonization in assigned territories of the Americas. With a band of 64 soldiers, missionaries, Baja (lower) California Native Americans, and Mexican civilians, Portolá established the Presidio of San Diego, a fortified military outpost, as the first Spanish settlement in Alta California. In July of 1769, Padre-Presidente Franciscan Fr. Junípero Serra founded Mission San Diego de Alcalá at Presidio Hill, the first of the 21 missions that would be established in Alta California by the Spanish and the Franciscan Order between 1769 and 1823, including Mission Santa Cruz (Hoover et al. 2002: 226; Lehmann 2000: 3; Koch 1973: 3).

On their quest to locate the Monterey Bay from the 160-year-old accounts of Sebastián Vizcaíno, the Portolá expedition first reached the present-day territory of Santa Cruz on October 17, 1769. After mistakenly circumventing the Monterey Bay and reaching the San Francisco Bay, the expedition backtracked to San Diego. The following year on May 31, 1770, a second expedition was organized by Portolá resulting in a successful location of the Monterey Bay. However, it would be an additional 21 years before the Franciscan order would establish Mission Santa Cruz in the area near the San Lorenzo River (Koch 1973: 2–3; Hoover et al. 2002: 447-8).

Father Fermín Lasuén, Corporal Luis Peralta, and five soldiers established Mission Santa Cruz on August 28, 1791, as the twelfth mission in the California Mission system. The Spanish Padres converted local Native Americans to Catholicism largely against their will, after which they were known as neophytes. Neophytes were forced to build the mission church and auxiliary structures from local timber, limestone, and adobe, as well as to cultivate wheat, barley, beans, corn, and lentils for their captors. In 1792, neophytes were directed to excavate a ditch for the purposes of carrying water from Tres Ojos de Agua (Three Eyes of Water), a group of three creeks near the modern entrance to the University of California, Santa Cruz campus, down to the Mission site. This ditch and the footpath beside it established the foundation for the future orientation of High Street in the City of Santa Cruz today, and offered the Mission a distinct advantage in a geographic area that often experienced water shortages during the summer months (Hoover et al. 2005: 448; Lehmann 2000: 3-4; SCWD n.d: 1).

From the start, Mission Santa Cruz was plagued by substantial issues. The forced conversion of the local native population by the Spanish Padres resulted in repeated rebellions, violence, desertion, and pestilence at Mission Santa Cruz. In 1793, the neophyte population attacked the Mission guards and burned their station to the ground. In 1798, Padre Fernandez reported that 189 of the approximately 230 neophytes living on the Mission grounds had abandoned the Mission, causing the crops to fail and the livestock to be largely neglected. The Mission also experienced problems wrought by a nearby settlement known as Villa de Branciforte (Lehmann 2000: 3-4).

In 1795, Spain established three self-governing Pueblos in Alta California that, unlike the Missions, would remain free from military and religious oversight. Villa de Branciforte was established in 1797 on the opposite bank of the San Lorenzo River from Mission Santa Cruz along the present-day alignment of both Branciforte Avenue and Branciforte Creek. The 40 settlers of Villa de Branciforte were not provided with the resources promised to build housing or cultivate the land and had to make do with crude dwellings of their own design. In 1803, there were 107 inhabitants, but because the population was made up of former soldiers, artisans, and criminals, they lacked the pertinent skill to farm and sustain themselves. Despite population growth in the initial years, the settlement was quickly deemed a failure by Spain (Lehmann 2000: 4-5).

By 1817, the population of Villa de Branciforte had dwindled to 52 people. In 1818, fearing the attack of the French pirate Hippolyte de Bouchard who had recently attacked the Monterey Presidio, the Mission Padres fled from the Mission Santa Cruz and placed the care of the complex with the remaining inhabitants of Villa de Branciforte. Instead of securing the Mission, the inhabitants of the Villa looted the valuable items from the complex while the Padres were away, including furniture, doors and flatware. Additionally, just under half of the 410 neophytes living at the Mission fled from the complex during the looting chaos and never returned (Lehmann 2000: 4-5).

## 3.3.2 Mexican Period (1822–1848)

After more than a decade of intermittent rebellion and warfare, New Spain (Mexico and the California territory) won independence from Spain in 1821. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants. In addition to eliminating the system of Spanish nobility in California, the Spanish missions across the territory were secularized during this period (Koch 1973: 10; Lehmann 2000: 4).

The secularization of the Spanish Missions meant that all communal mission property was placed in a trust with the intention of being returned to the local Native American population. In Santa Cruz, the land stolen by the Spanish was returned to Native Americans between 1834 and 1839, but a small pox epidemic in 1838 and reoccurring bouts of syphilis caused a massive decline in the Native American population from 284 persons in 1837 to only 71 persons in 1839. This meant that very few eligible Native American recipients remained to receive it, and records indicate that overall, only 25 Native Americans held property in the Santa Cruz area between 1834 and 1849 (Lehmann 2000: 4-5).

Extensive land grants were established in the interior during the Mexican Period, in part to increase the population inland from the more settled coastal areas where the Spanish had first concentrated its colonization efforts. Land grants to citizens covered over 150,000 acres of present-day Santa Cruz County.

The scarcity of water in the future City of Santa Cruz intensified towards the end of the Mexican Period with assistance from a formal decree by the Santa Cruz Alcalde, Don Manuel Rodriguez. In 1844, Rodriguez transferred the rights to the water carried by the 1792 aqueduct to the limited control of the mission and eight adjacent grant-holders. After this point, the growing population in the outlying areas of Santa Cruz became exclusively reliant on water taken from shallow wells and surface sources that were subject to seasonal surge and drought cycles, such as the San Lorenzo River (SCWD n.d.: 1).

## 3.3.3 American Period (1848–Present)

The Mexican–American War ended with the Treaty of Guadalupe Hidalgo in 1848, ushering California into its American Period. Santa Cruz was designated as one of the 27 original counties of California on February 18, 1850, shortly before California officially became a state with the Compromise of 1850. The new State of California recognized the ownership of lands in the state distributed under the Mexican land grants of the previous several decades (Lehmann 2000: 5; Koch 1973: 35).

As the Gold Rush was picking up steam in 1849, a massive influx of people seeking gold steadily flooded the rural counties of California. The gold fields quickly dried up, causing many new arrivals to refocus on other economic opportunities. In Santa Cruz County, insightful entrepreneurs saw the arrival of opportunity-seeking laborers as a means to harvest the abundant natural resources found throughout the area. The lumber, lime, cement, fishing, tanning, and leisure industries formed the economic foundation of the County (Lehmann 2000: 7).

In the central and southern areas of the County, early settlers took advantage of the fertile soil and temperate climate to establish large farms and dairies. Agricultural products including grain and apples were among the County's earliest and most successful.

Interest in the beauty of the Monterey Bay drew visitors to the County as early as the 1860s, causing beach tourism to emerge as another major industry in the County. Tourism was also responsible for quickening the rate of development along the scenic coastal areas of Santa Cruz County. A rail line running from Gilroy to Santa Cruz by way of Watsonville was completed by 1876, followed shortly thereafter by a narrow gauge line from Santa Cruz to Felton. The completion of the Santa Cruz–Watsonville Railroad allowed for greater mobility to the area from the inland counties of California, by both residents and tourists alike. As the port altogether declined due to lack of use and the ease of transport by train, the beachfront areas of the city presented savvy entrepreneurs with emerging opportunities (Lehmann 2000: 14, 25-6).

By 1893, Harper's Weekly acknowledged the County as a beach destination, promoting beachside institutions like the Neptune Baths built in 1884 by Captain C.F. Miller, and giving the coastal destinations like Camp Capitola the push needed to become a national tourist destination. The economic transition away from the early industries of the County towards tourism during this period helped to alleviate the strain placed on the forests in the north of the County, which had experienced widespread deforestation as a result of early logging and lime production activities in that area. Few old-growth redwood specimens remained in the forests of the Santa Cruz Mountains, and as it became clear that these trees were capable of drawing crowds on their own, their conservation became a dual effort to both save the trees and simultaneously promote Santa Cruz County as a one-stop tourism destination. A tourist to the County could visit the ocean and the big trees in one day with the help of the train (Lehmann 2000: 14).

As the County moved into the 1900s, agriculture and tourism continued as the region's most prominent economic drivers. By the late 1950s, the population began to expand with aid from the establishment of Cabrillo College in 1959 and the University of California at Santa Cruz in the 1965. These higher education facilities brought both students and jobs as the schools became major sources of community employment throughout the County. During the 1980s, a number of technology companies settled in the area due to its close proximity to Silicon Valley. Today, tourism, agriculture, manufacturing, and technology are the key industries that provide the economic base for County's 273,213 residents (U.S. Census Bureau 2019).

### 3.3.4 Early Development of Water Management in Santa Cruz County

The following context discusses the development of the Santa Cruz Water Department (SCWD), which provides municipal water to residents of the City and surrounding areas within the County. The SCWD water system serves approximately 23,700 residential, commercial, industrial, municipal, and irrigation accounts within approximately 30 square miles, encompassing the entire City and select contiguous County areas (EKI 2011: 9).

Several miles north of the evolving city center at the base of the Santa Cruz Mountains, multiple mountain streams and tributaries carve deep channels and valleys through the dense redwood and oak timberlands. The extensive virgin forests and the rich underground deposits of lime in the Santa Cruz Mountains attracted opportunistic settlers and purveyors in the mid- to late-1800s who sought to harness the power of the mountain streams to move the goods located in the remote area to market (Hoover et al. 2002: 456).

The California Gold Rush of 1848 accelerated the desirability of land across the state, and before long, access to water in the drought-prone region took on the highest level of importance. Instead of adopting an equal water access structure in the fashion of the eastern United States, the wealth potential of waterways during the Gold Rush shaped California water law into a "first in time, first in right" system known as Prior Appropriation. Under this system, riparian rights were granted to the first person to use a river or tributary for beneficial consumption like mining, farming, milling, or as-needed domestic use. When land in the Santa Cruz Mountains was subdivided and sold, access to the rivers and streams was enormously important. Not only did it mean that the initial use set out for a waterway was the primary use, it also meant that any subsequent uses could not supersede or negatively affect the chief use. The order that claims were recognized during this period established the foundation of the complicated system of water allocation rights still in use today in the County (Pisani 1984: 246–247).

Many of these mountain streams and tributaries were utilized by early landowners and tenant entrepreneurs to make a profit from the natural resources that formed the early economic basis of the County. Several of these mountain creeks still bear the names of the first men who established mills or permanently settled beside them. Majors Creek was named for Joseph L. Majors who established a grist mill on the creek prior to serving as the County Treasurer between 1850 and 1853. Liddell Creek was named for George Liddell who moved to the Santa Cruz Mountains and established a sawmill on the creek in 1851. Newell Creek was named for Addison Newell who established a farm in the steep, v-shaped valley on the banks of the creek in 1867 (Koch 1973: 33–34; D. Clark 2008: 174, 187, 215).

For others, the streams presented pure economic opportunity. The first power sawmill in California was built on Rancho Zayante by Isaac Graham in the 1842 and was driven by the waters of Zayante Creek. Isaac E. Davis and Albion P. Jordan of the Davis and Jordan Lime Company purchased a portion of Rancho Cañada del Rincon in 1853 as a promising quarry site. They also utilized the falling water on the property to process local lumber into fuel for their many kilns. The California Powder Works was established in 1865 on the bank of the San Lorenzo River on a portion of Rancho Carbonera. The Powder Works used the river to grind raw materials used in the production of the first smokeless powder manufactured on the west coast of the United States. By 1868, there were a sizable number of business and industries that relied on water from County waterways to operate, including 12 water-powered lumber mills, 10 steam-powered lumber mills, and 9 shingle mills in operation within the County (D. Clark 2008: 130–131; Hoover et al. 2005: 456; Koch 1973: 36–37; Brown 2011: 4).

As water management techniques were being applied to a variety of industry in the County, the successful technologies developed and used in early natural resource harvesting such as flumes and pumps prompted local residents in Santa Cruz to consider why these were not being put to use for the benefit of drinking water. Furthermore, the up-stream uses of many of these industries that had developed along streams in the Santa Cruz Mountains had resulted in a less than desirable water quality downstream.

## 3.4 Early Water Development in Santa Cruz City (1864–1917)

### 3.4.1 Private Development (1864–1916)

Beginning in the 1860s, acute cyclical water shortages and pollution prompted the development of several for-profit water systems in Santa Cruz. By the end of the 1880s, the two surviving major water companies, F.A. Hihn Water Works and the Santa Cruz Water Company, were joined into a single private business that competed with the new municipal water system that began in 1890 for almost three decades before being purchased by the City and integrated into the municipal system in 1916.

#### 3.4.1.1 F.A. Hihn Water Works (1864)

In 1864, prompted by the issue of shortage, young entrepreneurs Elihu Anthony and Fredrick A. Hihn implored the Board of County Supervisors to allow them to dig trenches and lay redwood pipes to transport water throughout Santa Cruz. The "wooden tubes" were chosen as an inexpensive alternative to iron pipes (Santa Cruz Weekly Sentinel 1864a: 2). The source of the water was an 8,000-gallon reservoir on Anthony's property supplied by water from Scott's Creek, and eager recipients of the water could gain access for a fee. (Brown 2011: 1–2; Santa Cruz Weekly Sentinel 1864: 2).

By 1876, the 1864 system was known as the F.A. Hihn Water Works, and it was the largest provider of water in the newly chartered City, with Dodero and Carbonera Creeks constituting its primary sources. The company predated the incorporation of Santa Cruz by 2 years (Koch 1973: 35; Brown and Dunlap 1956: 14; City of Santa Cruz 2020).

#### 3.4.1.2 The Santa Cruz Water Company (1866)

In 1866 a new, fee-based, private water supply company was founded to share in the lucrative profits of the F.A. Hihn Water Works. A man named E. Morgan acquired rights to the waters of the San Lorenzo River in 1866, just prior to the town of Santa Cruz being officially incorporated later that year. He used these rights to install a section of pipework conveying water to the area known then as the "The Flats," which comprises the modern area of Pacific Avenue and Front Street (SCWD n.d.: 1).

In 1876, Morgan sold his system to a wealthy man from San Francisco named H.K. Lowe. Under Lowe's guidance, the Santa Cruz Water Company incorporated in July 1876 and began construction on a pumping station on the San Lorenzo River approximately 1 mile upstream from the City, as well as a new reservoir located on High Street. Morgan retained 50 company shares and became the resident engineer and superintendent of the Santa Cruz Water Company. By the end of 1876, the company had also installed a Branciforte Creek diversion to deliver water via a pipeline to a new reservoir located at the base of School Street. As the City continued to grow and the steam-powered pumping plant installed on the San Lorenzo River became the source of repeated water-quality concerns, the Santa Cruz Water company acquired partial water appropriation rights to the Majors (then called Cojo Creek) in 1881. After the acquisition, the company scrapped the whole San Lorenzo pumping plant for $800 (Santa Cruz Weekly Sentinel 1877a: 1; 1877b: 2; SCWD n.d.: 1).

For the next several years, the Santa Cruz Water Company focused its attention on the construction of a pipeline to divert water from Majors Creek. This effort was very costly and the company slipped into dire financial condition. In August 1886, the company along with all of its appurtenances was sold to the City, financed through the sale of bonds from the Bank of Santa Cruz and the Anglo-Californian Bank. Hihn bitterly opposed the issuance of the bonds and contested their legality in court. The matter reached the Supreme Court and the election in favor of the bonds was declared invalid in 1887. By this time however, the City had already operated the water system for over a year when it was re-conveyed to private owners in 1887 (Santa Cruz Weekly Sentinel 1882: 3; SCWD n.d.: 1; Santa Cruz Surf 1890a: 1).

The City voted again in March 1888 to put up the bonds necessary to purchase the Santa Cruz Water Company system from the private owners. However, while the City was in the process of securing the bonds for the purchase, the Santa Cruz Water Company system was covertly sold to F.A. Hihn in a private, backroom transaction before the City could obtain legal ownership. Hihn quickly consolidated the Santa Cruz Water Company system with his own system of works. This transaction effectively severed any opportunity the City had of acquiring an established water works system with which to launch their own public water system (Santa Cruz Daily Surf 1888a: 3, 1888b: 2; Santa Cruz Surf 1890a: 1).

F.A. Hihn continued to operate the consolidated system as the Santa Cruz Water Company and expanded the service area east into the Seabright neighborhood until his death in 1913 (SCWD n.d.: 1).

## 3.4.2 Public Development (1890–1917)

During the 1880s, the rising price of these fee-based water systems like the F.A. Hihn Water Works and the Santa Cruz Water Company prompted the City to explore their own, city-owned, public water option. After several disappointing attempts to acquire an existing system of water works, the City revised its approach and began planning to build a diversion system and storage reservoir from the ground up, prompting the development of the first municipal water project in Santa Cruz, the Laguna Creek Dam and the Cowell Reservoir. This project led the way for other ambitious water system development in the City including several other north coast stream diversions and the first pumping plant on the San Lorenzo River. In 1916, the City acquired the rights to the Santa Cruz Water Company and began to tie in the systems as one, forming the basis of the modern SCWD system used today.

### 3.4.2.1 The Laguna Creek Dam and the Cowell Reservoir (1890)

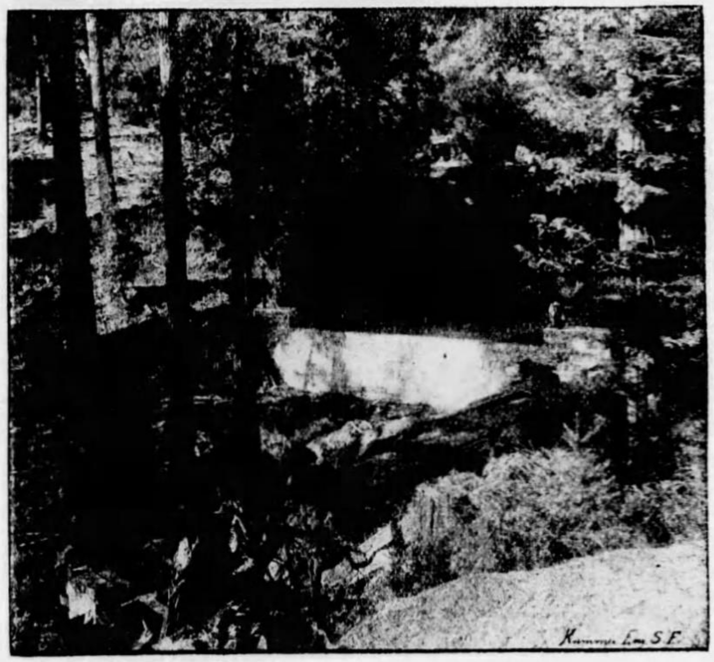
In July 1888, the Common Council secured the water rights to the Laguna Creek. “The Laguna,” the *Santa Cruz Sentinel* reported, “is a rushing, roaring mountain stream, entirely rock bound and tree shaded above the falls where it is proposed to take the water out (Santa Cruz Sentinel 1888: 2).” The stream was capable of supplying 1.4 million gallons towards a City-owned water works. Plans were finally in motion for the construction of the first city-owned water works, supplied through a new pipeline by the waters of Laguna Creek, with reserve storage in a new City reservoir on Henry Cowell’s ranch property known as the Cowell Street Reservoir, which was located roughly at the present site of the U.C. Santa Cruz Arboretum. The *Santa Cruz Surf* reported with excitement that the new project would mean open, municipal water so that each citizen of Santa Cruz could finally “quench his thirst with free water without ‘dropping a nickel in the slot’” (Santa Cruz Surf 1890a: 1).

The bonds required to fund the construction of the City water works were secured within the following year, and in July 1889, a civil engineer named G.S. Schussler issues a report in favor of the project that valued the proposed undertaking at $260K (Santa Cruz Surf 1889a: 3, 1889b: 3).

The prominent San Francisco firm Risdon Iron Works was selected as the contractor, who were known for producing the great iron pipes for steam ships. The *Santa Cruz Surf* reported that work on the dam on Laguna Creek and the dam at the reservoir site would be completed by the San Francisco contracting firm Kelso and Dare (Santa Cruz Surf 1889c: 3).

On September 30, 1890, the *Santa Cruz Surf* reported that the reservoir and the pipeline of the City water works were nearly complete. The article published an in-depth description of the new Laguna Creek Dam (Exhibit 1), stating that (Santa Cruz Surf 1890b: 3):

> The dam across Laguna Creek just above the Henneuse place is one of the finest pieces of rubble stone work in the county and not to be excelled anywhere. The granite rocks used in its construction were taken from the bed of the creek, some of them weighing as much as two tons. The water will first be diverted from the Laguna at this point into a flume 3x4 feet and one hundred feet in length, also built of solid masonry. This is nearly level and terminates in a basin two feet lower, and into which the sand and sediment which may be carried in the water in a time of storm will settle. Gates are provided by means of which this basin can be cleared as often as required. From here the water will enter the 14-inch main through which it will be carried to the storage reservoir. This pipe follows the canyon of the Laguna creek as nearly as possible to the county road a distance of about three miles.



THE RETAINING DAM ON LAGUNA CREEK.

**Exhibit 1.** The earliest known photograph of the Laguna Creek Masonry Dam published in the Santa Cruz Surf in 1892 (Santa Cruz Surf 1892: 2).

On October 18, 1890, the last pipe connecting the Laguna Creek to the new Cowell Street Reservoir (Exhibit 2) was put into position. The pipeline emptied into the reservoir for storage and eventual distribution to the homes and businesses of Santa Cruz (Santa Cruz Surf 1890c: 3).

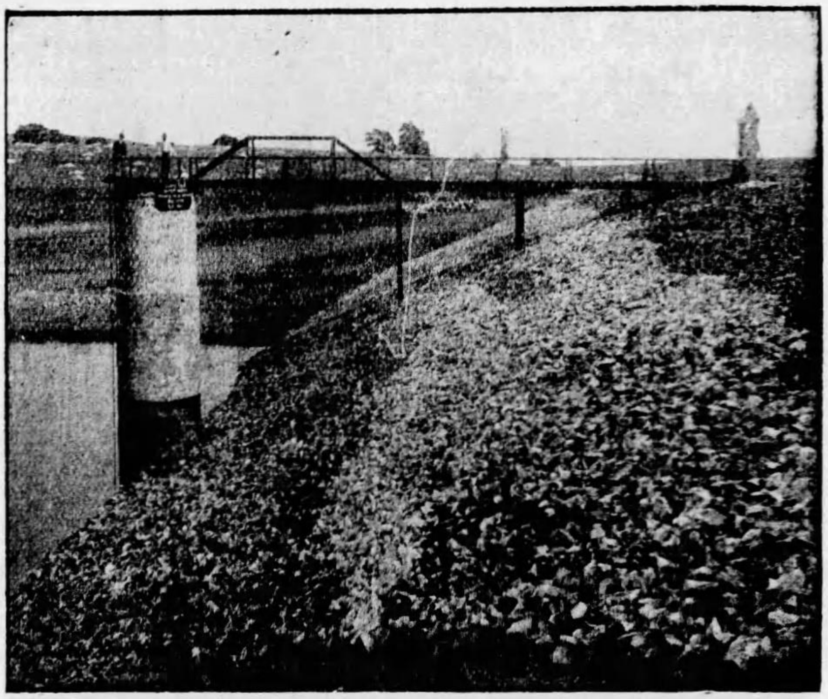

THE STORAGE RESERVOIR (60,000,000 GALLONS).

**Exhibit 2.** The earliest known photograph of the Cowell Street Reservoir published in the *Santa Cruz Surf* in 1892 (Santa Cruz Surf 1892: 2).

### 3.4.2.2 Reggiardo Creek Diversion (Flume 1891, Dam 1912)

A 965-foot-long flume was completed in 1891 connecting the west branch of Laguna Creek, colloquially known as Reggiardo Creek, to the main Laguna Creek by emptying out water to the north of the Laguna Creek Dam. The new flume was intended to help supplement the municipal supply from Laguna Creek, as the year-old Laguna Creek Dam was quickly inundated with sediment and less water than expected was being captured by the system overall (Santa Cruz Surf 1892: 2).

In 1912, R.S. Tait, the water superintendent, announced that a dam had been completed on Reggiardo Creek in order to aid in the supply of daily drinking water sourced from Laguna Creek. The level of Laguna Creek had been significantly reduced by a lack of rainfall in the watershed area, causing the supply of water in the impoundment to drop below sufficient levels to support the community (SC Evening News 1912: 2).

### 3.4.2.3 High Street Distribution Reservoir (1904)

In 1894, the City purchased a parcel of land located on the south side of High Street between present-day Laurent and Storey Streets for the construction of a Distribution Reservoir. The Cowell Reservoir was constructed to hold 60 million gallons, but it was carved into a porous limestone formation known as karst that caused approximately 1 million gallons of leakage daily. The Distribution Reservoir was intended to serve are a secondary reservoir for the Cowell Reservoir to preserve the water that was otherwise lost before it could be pumped into the distribution system (Santa Cruz County Assessor 1894; SCMU 2016: 1).

The site for the Distribution Reservoir overlapped Dodero Spring Creek (then called Meyrick Brook) and provided the added benefit of impounding a percentage of the water from this source while temporarily storing the water impounded from the City Water Works on Laguna and Reggiardo Creeks. The survey and specifications for the new reservoir were completed in 1895 and the Santa Cruz Sentinel reported that the reservoir would have a capacity of 2.5 million gallons and cover three-quarters of an acre. Construction on the reservoir began in 1904 and it was completed later that year (Santa Cruz Sentinel 1895: 3, 1903: 4, 1904: 3).

#### 3.4.2.4 Liddell Spring Diversion (1913)

Discussions about securing the title to Liddell Spring and utilizing it as a source of municipal water were gathering support in the City government beginning early in 1913. By July 1913, a pipeline between Liddell Spring and the main municipal pipeline from Laguna Creek was operational, and, at a rate of 590,000 gallons per day, was out-producing all the other existing municipal water sources (SC Evening News 1913a: 1).

#### 3.4.2.5 Crossing Street Pump Station (1913)

In 1913, a new well was drilled on the San Lorenzo River at Crossing Street, just north of the present intersection of Highway 1 with the river. It was equipped by a 75-horsepower, 5-inch, three-step centrifugal pump that was installed by the United Iron Works. The pump was capable of pumping 500 gallons per minute and cost $1844 dollars at the time of installation (SC Evening News 1913b: 1).

#### 3.4.2.6 Acquisition of the Santa Cruz Water Company System (1913–1916)

Fredrick Hihn passed away in 1913 and his ownership of the Santa Cruz Water Company passed to his children. By 1916, the City had acquired the Santa Cruz Water Company system, and assumed full legal ownership of all components, which included rights to water being drawn from Branciforte Creek, Carbonera Creek, Majors Creek, and the San Lorenzo River (SCWD n.d.: 2; Monterey American 1913: 7; SC Evening News 1914: 1).

## 3.5 Interwar Water Development in Santa Cruz (1918–1939)

Water development during the early twentieth century interwar period in Santa Cruz was dominated by publicly funded projects. As the population increased in the eastern, mid-county areas such as Live Oak, small, private for-profit systems developed beginning in the 1930s to meet the increased demand in these neighborhoods that were otherwise unserved by the existing Santa Cruz infrastructure.

### 3.5.1 Public Development (1918–1939)

Public development during this period was predominantly focused on the repair and upgrade of existing system components. Although upgrades and additions were added to the several major facilities to increase the ability to store and improve the overall quality of municipal water during this period, with projects such as the Bay Street Reservoir in 1924 and the New Crossing Street Pumping Plant in 1929, the output was not widely increased between 1917 and 1930. Service began expanding into the areas to the east outside of the City with focused initiatives like the East Side Water Extension during this period (Brown and Dunlap 1956: 1-2).

#### 3.5.1.1 The Bay Street Reservoir (1924)

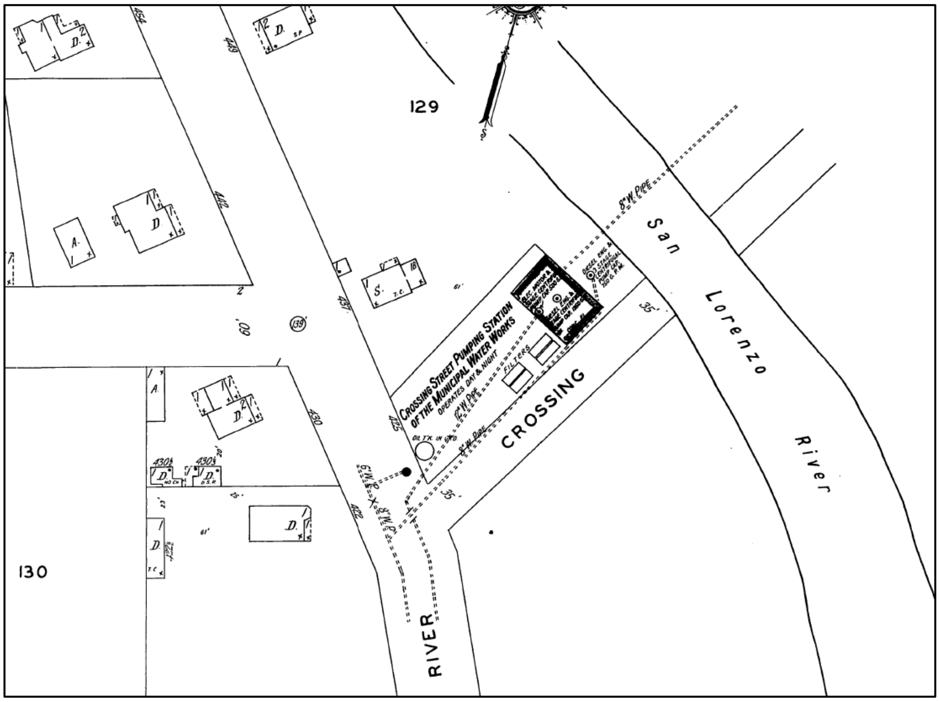
The Bay Street reservoir was completed in 1924 and was located 1 mile southeast of the Cowell Street Reservoir on a site to the east from the present intersection of Bay Street and Meder Street. The 35-million-gallon capacity open-air tank was built to replace the Cowell Street reservoir. The Bay Street reservoir was constructed of stone and lined with concrete and was intended to be much more capable of reserving water accumulated from the surface stream sources for use during the dry summer and fall months (Exhibit 3) (SCMU 2016: 1).

**Exhibit 3.** Construction of the Bay Street Reservoir in 1924 (SCPL 1924).

#### 3.5.1.2 Crossing Street Pumping Plant (1929)

In 1929, the City completed a new, modern pumping plant on the Lorenzo River on the southern side of Crossing Street across from the 1913 Crossing Street Pumping Plant site (Exhibit 4). Once complete, the plant went by the same name as its predecessor until it eventually was known simply as the Municipal Pumping Plant. Today, it is called the Coast Pump Station.

The new facility was designed by City engineer Roy Fowler and consisted of a pumping plant capable of producing 6 million gallons of potable water in a 24-hour period from the San Lorenzo River. The plant operated with the help of “diesel engines, pumps, motors, generators, and all other necessary auxiliary equipment” (SC Evening News 1928: 8). The plant also treated the water with chlorine, making it safer to drink (SCWD n.d.: 3; Brown and Dunlap 1956: 1; SC Evening News 1928: 8, 1929: 7).



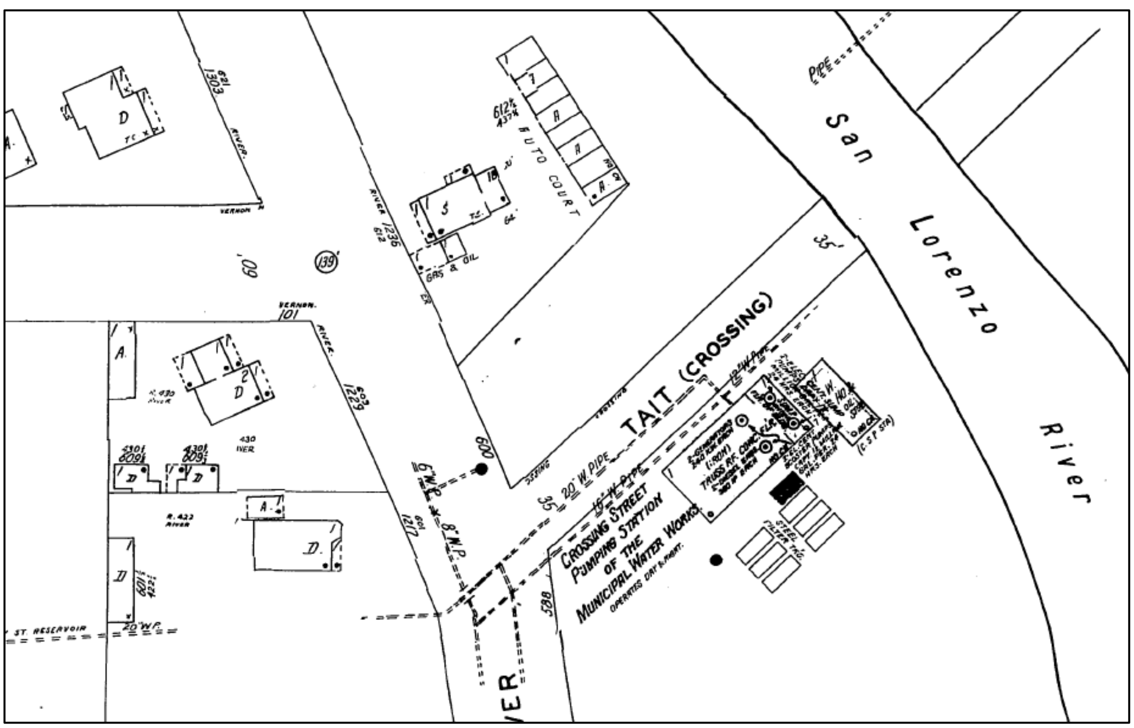




**Exhibit 4.** Comparison of the 1928 Sanborn Map (top) showing the old Crossing Street Pumping Plant and the 1928-1950 Sanborn Map showing the new facility completed in 1929 in approximately 1945 (Sanborn Map Company 1928: 103, 1928-1950: 103)

The low rainfall in winter 1931 prompted the City to drill four more wells at the site of the Crossing Street Pumping Plant. One of the wells was located at the site of the pumping plant on the west side of the river, while the remaining three were drilled on the east bank. This increased the output of the municipal water supply greatly and allowed for expansion into other parts of the City. In 1934, the City boasted in the *Santa Cruz Sentinel* that 63.4 million gallons of water had earned the City a profit of $11,119 during April 1934 (Brown and Dunlap 1956: 14; SC Evening News 1931: 5; Santa Cruz Sentinel 1934b: 7).

In 1945, Crossing Street was renamed Tait Street for Water Superintendent R.S. Tait. A photograph of the Municipal Pumping Plant included in the 1956 investigative report into the Santa Cruz area water supply projects by engineers Brown and Dunlap demonstrates how the plant appeared during this period (Exhibit 5) (Santa Cruz Sentinel 1945: 8).


SANTA CRUZ MUNICIPAL PUMPING PLANT. Building houses low and high lift pumps and engine-driven generators. Pressure type filters are at right of building.

**Exhibit 5.** The Municipal Pumping Plant as it appeared in 1956 (Brown and Dunlap 1956: 18).

### 3.5.1.3 East Side City Water Extension (1934)

In 1934, work began on what was known as the East Side Water Extension, to extend the municipal water service into the Seabright and Live Oak areas of Santa Cruz via a new pipeline. Santa Cruz East Side residents C. W. Raisch, E. Brandt, George Ellison, Edith H. Evans, and Nathan Menderson donated the private property to the City needed for a right-of-way, and the pipeline extended from the municipal system to the areas of the City located on the east side of the San Lorenzo River. Additionally, two 1,000,000-gallon tanks were placed in De Laveaga Park in the north of the City as a reservoir for this branch of the system (Santa Cruz Sentinel 1933: 7, 1934a: 9).

### 3.5.2 Private Development (1936–1939)

In areas of the county that were not serviced by the municipal system, private systems such as the Beltz system were developed by residents to provide water for other residents of the area.

#### 3.5.2.1 Beltz Water Company (1936)

In 1936, the County granted Iowa native, Charles Lemar Beltz, the rights to begin operating a private water system in the area of the County roughly bounded by Capitola Road to the north, Rodeo Gulch and Corcoran's Lagoon to the west, the bay to the south, and 41st Avenue to the east. The ambitious service area of the Beltz system covered approximately 25% of the Live Oaks district with water sourced from ground wells located throughout the district and conveyed through pipelines situated beside Live Oak roads (Santa Cruz Sentinel 1936: 8, 1947: 1; SC Evening News 1936: 2).

## 3.6 Post-War Growth (1945–1984)

Many of the post-war water projects in Santa Cruz can be characterized as repair of existing infrastructure and expansion of the overall water system to support rapid population growth. The years following World War II provoked westward migration and an increase in birth rates, causing the population of California to increase from 6.95 million to 10.65 million between 1940 and 1950. In Santa Cruz, the growth of the community from 27,430 to 41,680 between 1940 and 1950 caused the common seasonal water shortages during dry months to become problematic in regard to growth and potential for community expansion (SCPL n.d.: 1).

In 1945, the state recognized a water shortage in Santa Cruz and authorized an investigation of available water resources. In 1946, the acute nature of the water crisis prompted the community to request a survey to determine an inventory of the available groundwater supply and plan for growth in the future. Completed In 1948, the survey determined that although the San Lorenzo pumping plant was running at full capacity, 24 hours per day during the dry summer of 1947, the river was so low that the entire run was being diverted through the pumps and into the City mains for consumption (SWRB 1953: 57; Brown and Dunlap 1956: 1–2).

Prompted by these concerns, in 1953, the State Water Resources Board released a report that inventoried available surface and underground water sources in the County and projected increased water utilization that exceeded the available water in Pajaro Valley, the Soquel Creek area, and the coastal area around and including Santa Cruz. The report identified requirements for supplemental water for Santa Cruz and areas served by the City of Santa Cruz Water Department (SWRB 1953: 57).

The County formed the Santa Cruz County Flood Control and Water Conservation district in 1955 and hired Creegan & D'Angelo Civil Engineers in 1956 to complete an extensive survey identifying dam sites, groundwater sources, and additional steps to improve control of the water supply throughout the County to compete with the City's proposals. The report asserted that population growth was a major concern for the water supply in the City because "the City of Santa Cruz has current water requirements which equal the capacity of the existing water supply system during a relatively dry era. Should an exceptionally dry season be experienced, there would be a serious water shortage in the City of Santa Cruz" (Creegan and D'Angelo 1957: 8).

Present supplies were determined to be insufficient for standard rates of population growth, including years that rainfall was considered more plentiful. Despite the rate of water consumption in the service area tripling between the mid-1930s and mid-1950s, there had been no additions to the municipal water supply during that time. Creegan & D'Angelo would also serve as the engineers for the Santa Cruz County Flood Control and Water Conservation District Advisory Committee, and ultimately, their recommendation to the council to remedy the current water crisis in the City was a dam on Newell Creek (Santa Cruz Sentinel 1953: 1, 1954: 1, 1958a: 4).

## 3.6.1 Public Development (1945–1984)

During the post-war era, a number of general obligation and revenue bonds helped to fund a wide range of water-related projects in Santa Cruz, including routine maintenance and transmission line replacements, but also projects such as the Newell Creek Dam and the Graham Hill Treatment Plant. The need for these projects was driven by the need for more water to support a growing, post-war population, but the use of bonds allowed for flexibility to project for future growth. In 1974, the *Santa Cruz Sentinel* surmised that "successful bond issues in 1958, 1963 and in 1967 reflected public confidence in the water administration and a recognition of the needs for more water, apparently, for there was relatively little difficulty getting approval" (Santa Cruz Sentinel 1974: 1–2).

### 3.6.1.1 Construction of Newell Creek Dam (1960, modified in 1985)

As a surface water storage on Newell Creek became a distinct reality following the recommendations of Creegan and D'Angelo, City Water Department Director, Weston Webber, voiced his support for the project in 1957. Ultimately, of the five proposed dams, only the Newell Creek Dam would come to fruition (Santa Cruz Sentinel 1957a: 1, 1957b: 13, 1957c: 12).

In 1958, the University of California Regents announced that they were considering the Cowell Ranch in the City of Santa Cruz as the site of a future University of California Campus. The City would be required to provide services and facilities for the prospective University community, which early figures suggested was to include around 2,500 students. In anticipation of the Water Revenue Bond Election in November 1958 to approve the bonds necessary to construct the Newell Creek Dam, a new water treatment plant, and pipelines to transport the water, the Santa Cruz Sentinel published an article outlining the impact of the proposed bonds. In reference to the speculative University in the City, the closing paragraph of the article states that "University officials know that the present water supply of Santa Cruz is inadequate, even for normal needs. Failure to correct this situation could end all chance of the selection of Santa Cruz as the University site." (Santa Cruz Sentinel 1958b: 1, 1961a: 1, 1961b: 1).

On November 5, 1958, the voters of the City of Santa Cruz approved $5.5 million in water revenue bonds necessary for the City to purchase 2,162 acres of land in the Newell Creek watershed from the San Lorenzo Valley Water District and build a dam on the site. Creegan & D'Angelo designed the earthfill dam (SCWD n.d.: 2; Santa Cruz Sentinel 1958a: 4).

Contractors Williams and Burrows Inc. of Belmont, California, began the construction of the Newell Creek Dam and preparation for the creation of Loch Lomond in 1960. The early stages of planning and execution were made more difficult by the narrow valley, allowing only one road for ingress and egress for equipment and supplies. The construction of the 195-foot-tall earthfill dam began with a "grout curtain" that pushed concrete 100 feet into the bedrock to fill any fissures or imperfections, ensuring a structurally sound base. The height and width of the dam's crest was first determined by the reinforced concrete ends. The embankment was then built up using successive layers of random fill from the immediate area, compacted with sheepsfoot tampers above and around the 300 feet of impervious material at the core of the embankment. Four construction personnel lost their lives in October 1960 during the layered construction of the embankment. A brass plaque commemorating these men was commissioned and remains today on the southwest elevation of the Control House (Santa Cruz Sentinel 1960a: 15, 1960b, 1).

The Newell Creek Dam was completed and filling steadily with water by 1961; however, the recreation area on the resulting reservoir was yet to be built. Keeping with the Scottish naming tradition started by Scotsman John Burns when he christened the mountain Ben Lomond in the 1850s, the reservoir was dedicated Loch Lomond during two days of festivities on July 27 and 28, 1963 (Santa Cruz Sentinel 1963: 1).

By 1964, the City distributed a notice to bid on the construction of the Loch Lomond Recreation Development. With the help of a $149,000 state grant, the Loch Lomond Recreation Area was completed by the spring of 1965. It included picnic areas, a concessions building, parking areas, two docks, and a boat launch. An all-weather road leading from Lompico to the Recreation Area was a crucial improvement constructed during this phase of the Project. It allowed visitors to experience the new recreation activities available at Loch Lomond, while simultaneously comprehending the realities of water storage and use in the county (Santa Cruz Sentinel 1964a: 3).

During the early 1980s, a survey completed by the Division of Safety of Dams demonstrated that the spillway at Newell Creek Dam did not meet the newest safety criteria for probable maximum flood conditions. A portion of the 1984 funds allocated for modifications and upgrades to the municipal system for were apportioned toward the upgrade of the dam's spillway wall. The upgrades were implemented in 1985 and included heightening the Newell Creek Dam spillway wall and the installation of a permanent aerator system (SCWD n.d.: 2; Santa Cruz Sentinel 1984: 3).

#### 3.6.1.2 Graham Hill Water Treatment Plant (1960, Upgraded in 1987)

The Graham Hill Water Treatment Plant was a water filtration and treatment facility completed in 1961 and located beside Graham Hill Road. It was planned and completed during the same period as the Newell Creek Dam and also funded by the same water revenue bonds that helped to build the dam. The plant was designed with a capacity to treat 12-million gallons of water per day. Among other sources which have been added since the plant's initial construction, water derived from the coastal watersheds including Laguna Creek, Reggiardo Creek, Liddell Spring and Majors Creek is transported through a blend of gravity and pumping to the Graham Hill Water Treatment Plant to be filtered and treated before distribution as drinking water (SCWD n.d.: 3; SCMU 2016: 1; Santa Cruz Sentinel 1961c: 16).Raw water from the San Lorenzo River and Loch Lomond Reservoir are also treated at the Graham Hill Water Treatment Plant.

The Graham Hill Treatment Plant was upgraded and enhanced in 1987 following a push for major upgrades throughout the municipal system beginning in 1984 (See section 1.4.1.5 Infrastructure Upgrades (1984) for more information) (SCMU 2016: 1).

#### 3.6.1.3 Tait Diversion Intake (Added 1961, Reconfigured in 1983)

The Tait Diversion, as it called today, is presently located just upriver from the Coast Pump Station. Together, the combined Tait Diversion and Coast Pump Station facility continues to be one of the most important sources of water for the City. Surface diversion rights for the San Lorenzo River date back to 1924 at what is now the Coast Pump Station but was first known as the Crossing Street Pumping Plant and later the Municipal Pumping Plant (see sections 1.2.2.4 and 1.3.1.2). Accounts of a functional diversion across the river near the pumping plant date back to at least 1930s. A photograph included in the 1956 investigative report into Santa Cruz area water supply projects by engineers Brown and Dunlap included a photograph of the existing diversion on the site during this period (Exhibit 6).

**SANTA CRUZ DIVERSION DAM** on the San Lorenzo River. Approximately one-half of the water used by the city is obtained from this source.

**Exhibit 6.** Existing diversion dam across the San Lorenzo River in 1956 (Brown and Dunlap 1956: 15)

By 1960 when the large-scale modernization campaign across the City was in progress, a design for a new intake structure on the existing pumping plant diversion dam was also planned. The new intake integrated the existing dam (age unknown) into the design for a new, modern intake located on the east bank of the river that was complete with a spillway fish ladder and new 20" and 24" transmission pipelines (Santa Cruz Sentinel 1934b: 7; Brown and Caldwell 1960: 1).

In 1983, the intake was again redesigned. The new design relocated the intake from the east bank of the river to the west bank while simultaneously upgrading all electrical controls and switch gear and relocating it above flood levels (SCWD n.d.: 3; Dewante and Stowell 1983: 3).

#### 3.6.1.4 Felton Diversion Station (1976)

The Felton Diversion was installed on the San Lorenzo River north of Henry Cowell State Park and completed in 1976. James M. Montgomery of Consulting Engineers Inc. designed the diversion structure and the contractors for the project were the Dan Captuo Company. The structure is comprised of a permanent concrete foundation spanning the river containing an inflatable rubber dam. The inflatable dam, or bladder, can be raised to maintain and impoundment for the diversion of water which is transported by pipeline to supplement storage at Loch Lomond. The inflatable dam can also be lowered to control the flow of water during a storm surge or other similar event. The structure also includes a fish-screened intake structure, a conventional sump and high-lift pump station, a fish ladder, and a control building (JMM 1969: c-3, 1970: VII-2; Santa Cruz Sentinel 1976: 13).

#### 3.6.1.5 Infrastructure Upgrades (1984)

In January of 1982, a powerful storm caused flooding throughout the Santa Cruz County. It was discovered that a main pipeline from Loch Lomond had burst and was leaking at an alarming rate. Although the damaged section of pipeline was relocated and repaired by the end of the year, the event renewed community attention to the potential for the aging components of the municipal system to require upfront repair and maintenance (Santa Cruz Sentinel 1982: 1, 8; Cardona and Associates 1982).

In 1984, the Santa Cruz Water Department received $11.7 million dollars through private Certificates of Participation in order to fund upgrades and modernizations to the water infrastructure system throughout the City. The upgrades were wide-spread and included the renovation and upgrade of the Graham Hill Water Treatment plant, the construction of a laboratory to monitor water quality, new storage tanks in the Rolling Wood service area, enlarging the capacity of the Beltz Water Treatment plant to 2-million gallons daily, and improvements to the Newell Creek Dam spillway (SCWD n.d.: 2; Santa Cruz Sentinel 1984: 3).

### 3.6.2 Private Systems Acquisition (1967-1969)

The City of Santa Cruz purchased several private water systems between 1967 and 1969, including the Beltz Water Company, the Rolling Woods Utilities Inc., and Pestana Water Systems. These companies and their service infrastructure were all located in areas of Santa Cruz that had been only recently come into the City's sphere of influence. The acquisition of these systems allowed the City to organize reliable water distribution services to areas such as Live Oak (SCMU 2016: 2)

#### 3.6.2.1 Beltz Water Company Acquisition (1967)

Charles Beltz passed away in 1947 and left the operation of the Beltz Water Company to his only son, Chester Beltz. Under the supervision of his son, the company developed a both a wider, and more dense service area in response to the massive post-war population growth in the County. To accommodate the overall population growth of the County from 45,057 residents in 1940 to 120,882 residents in 1970, many of the larger agricultural properties and larger estates within the Beltz service area in Live Oak were subdivided to accommodate new, residential development. By 1955, the Beltz Water Company system included six source wells that allowed the system to accommodate incremental growth from 900 customers in 1955 to approximately 1,500 customers by 1967 (Santa Cruz Sentinel 1947: 1, 1955: 18, 1967a: 4, 1967b: 5, 1967c: 24; SCPL n.d.: 1; UCSB 2020).

The Beltz Water company entered into negotiations with the City of Santa Cruz beginning in 1965 to set a price for the purchase of the Beltz system. When the City of Santa Cruz finally purchased the Beltz Water Company System in 1967 for $245,000, the acquisition equipped the City with an additional source of groundwater from six existing wells (Exhibit 7). However, due to inadequate means to treat the high levels of iron and manganese in the Beltz well water, after the purchase, the wells were temporarily discontinued. Instead, the Beltz conveyance infrastructure was tied into the existing municipal system and customers began receiving water on July 1, 1967 (Santa Cruz Sentinel 1967a: 4, 1967b: 5, 1967c: 24).


Exhibit 7. Boundary of the Beltz service area and location of existing wells in 1967. The letters show some of the tie-ins built by the Santa Cruz Water Department to utilize the Beltz infrastructure (SCWD 1967: D)

In 1972, an Iron and Manganese removal treatment plant was constructed at the site of well 6 located off Roland Avenue that allowed for the treatment of 1,000,000 gallons of water daily for use in the eastern section of the municipal system. In 1973, it was announced by Water Department director, Wes Webber, that the site containing well 6 would also receive a new well in anticipation of expansion of the new treatment plant when possible to increase the daily output of the Beltz system overall. This expansion of the plant took place in 1985 and was funded in part by the $11.7 million in funds allocated for major upgrades throughout the municipal system during the mid-1980s (Santa Cruz Sentinel 1973: 15; SCWD 1985: G-4).

### 3.6.2.2 Pestana Water Company (Founded 1961, Acquired 1969)

John Pestana founded the Pestana Water Company in 1961 to serve the modest Santa Cruz Gardens subdivision located in the hills north of Live Oak. Pestana, along with his brother, Ernie Pestana, were part owners of a sub developer from Santa Clara County responsible for the construction of the Santa Cruz Gardens subdivision in the early 1960s. In 1962, Chester Beltz, owner of the Beltz Water Company, was hired to operate the Pestana Water Company system (Santa Cruz Sentinel 1961d: 10, 1961e: 28, 1969a: 3).

The Pestana Water Company was sold to the City for $36,615 in November 1969. The purchase of the three-well system added 243 customers to the municipal service system. The City immediately improved the pump operating the system, which was only capable of pumping 286 gallons per minute. In 1971, a pipeline was constructed to connect the Pestana system to the City main (Santa Cruz Sentinel 1969a: 3, 1969b: 4).

### 3.6.2.3 Rolling Woods Utilities Inc. (Founded 1963, Acquired 1969)

Rolling Woods Utilities Inc. was formed in 1963 to serve the Rolling Woods subdivision located in the hills beside Graham Hill Road north of Pasatiempo. The City purchased the company in 1969, at which time the service area extended to 135 customers (Santa Cruz Sentinel 1969b: 4, 1969c: 13).

## 3.7 The San Lorenzo Valley Water District (1941)

Several miles north of Santa Cruz at the base of the Santa Cruz Mountains, the San Lorenzo River carves a deep valley through the dense redwood and oak timberlands. The communities located in the various valleys within the Santa Cruz Mountains owe their existence to the select industries that sought to profit from the wealth of raw resources found here. The extent of the virgin forests in the San Lorenzo Valley and the rich underground deposits of lime attracted opportunistic settlers and purveyors who sought to harness the power of the San Lorenzo River and its many tributaries to move their goods to market locally, throughout California, and the world.

By 1899, Boulder Creek in the San Lorenzo Valley was the fifth largest shipper of timber in the country. As the San Lorenzo Valley was settled in the mid-1800s, populations in Ben Lomond, Brookdale, and Boulder Creek formed their own water systems. The number of vacation homes increased in the early 1900s and as a result, many of these small subdivisions in the San Lorenzo Valley developed their own water systems. These water systems were supplied by nearby springs and creeks by way of flumes or pipelines and were designed to serve the needs of residents who occupied their vacation homes only a few weeks a year. When the County population doubled between 1900 to 1940 from 21,512 to 45,057 persons and more people moved permanently into the valley, the existing water systems became inadequate (SLVWD 2020; SCPL n.d.: 1).

Frequent droughts between 1912 and 1939 convinced San Lorenzo Valley leaders to form a water district to better control water, to serve the needs of the valley. After one failed attempt to form a county water district by election in 1939, the SLVWD was formed by the voters on April 3, 1941. Negative voter returns from the towns of Felton and

Scotts Valley left those areas out of the district boundaries, which included Bear Creek, Boulder Creek, Alba, and Ben Lomond school districts, and part of the Sequoia school district (SLVWD 2020).

In 1959, the SLVWD signed an agreement with the City, in which the SLVWD sold the City its timber and mineral rights to the Newell Creek watershed, in exchange for right to a share of the water stored by Newell Creek Dam (SLVWD 2020; Brown 2011: 161).

Today, the SLVWD supports a population of approximately 35,000 people across roughly 60 square miles of service area encompassing the towns and communities of Ben Lomond, Boulder Creek, Brookdale, Felton, Lompico, and Zayante. The system also includes sections of the City of Scotts Valley, including two subdivisions (the Pasatiempo Pines and Manana Woods) and two mobile home parks (Vista del Lago and Spring Lakes) (SLVWD 2020; SVWD 2020).

## 3.8 Central Santa Cruz County Water District (1950)

A proposition to organize the Central Santa Cruz County Water District (CSCCWD) encompassing the Oakdale and Pleasant Valley School Districts in south Santa Cruz County was adopted by vote in 1950. Today, the district is known by its shortened name, the Central Water District (CWD) (CWD 2020).

In 1951, $140,000 in obligation bonds were approved by the district voters to fund the construction of a system of waterworks for the district comprised of a well, storage facilities, and distribution infrastructure. In 1953, the district agreed to purchase the Valencia Water Works from owners Jesse and Fern Nicholson for $1,500, which served approximately 24 customers at the time. The CSCCWD was serving about 80 customers by the end of 1953 (CWD 2020).

The district experienced multiple upgrades beginning in 1978. Early in 1978, one-way interties were installed at two locations between the CSCCWD and the SqCWD systems to provide emergency water from the CSCCWD system down gradient to the SqCWD system. The first was located near Huntington Drive and the second on Soquel Drive near Freedom Boulevard. Additional CSCCWD upgrades installed during this period were funded by monies from the California State Safe Drinking Water Bond Law (1976), and included the drilling of "well #10, the Valencia Booster Pump Station, a telemetering system, and approximately 24,560 feet of mainline piping (CWD 2020)." The District completed its modernization campaign by shortening its official name to the Central Water District (CWD) in December 1980. In 2016, the CWD maintained 892 service connections (CWD 2020).

## 3.9 Scotts Valley Water District (1961)

The Scotts Valley Water District was formed by a vote in 1961 under the County Water District Law, Division XII of the California Water Code (Section 30000 et seq.). The 1961 district formation merged multiple small water supply systems that had been servicing the 6 square-mile district encompassing most of the incorporated area of Scotts Valley, but also some unincorporated territory as well. Today, the district provides service to approximately 10,700 people by way of 4,200 service connections (SVWD 2020; State of California 2020).

## 3.10 Soquel Creek Water District (1961)

The Soquel Creek County Water District was formed by a local vote in 1961 according to the provisions of County Water District Law, Division XII of the California Water Code (Section 30000 et seq.). The purpose of the District was to implement water management and flood control services. The flood control services were discontinued 3 years later when the Soquel Creek County Water District acquired the Monterey Bay Water Company. The word "County" was removed from the name of the district in 1983 and the district was henceforth known as the Soquel Creek Water District (SqCWD). Today, SqCWD maintains four service areas supplied completely by groundwater sources which provides water to approximately 40,400 customers (SqCWD 2020; State of California 2020).

### 3.10.1 The Monterey Bay Water Company

Prior to its purchase by the Soquel Creek County Water District in 1964, the Monterey Bay Water Company (MBWC) serviced a large portion of south Santa Cruz County through the gradual purchase of multiple existing systems overtime (Santa Cruz Sentinel 1964b: 18).

MBWC formed in 1942 when the state railroad commission authorized the sale of the Aptos Water Company to the two directors of MBWC, James Harris and George Cooper. By 1943, the MBWC was servicing homeowners in the Rio Del Mar, Aptos, Monte Toyon, Opal Cliffs, and the Monterey Bay Heights neighborhoods. In 1943, MBWC purchased the Soquel-Capitola water distribution system which served approximately 600 customers in Soquel and Capitola areas and featured infrastructure components that had been originally installed by F.A. Hihn beginning in the 1870s and 1880s. In 1952, the MBWC purchased the Seacliff Water Works, which along with its subsidiary, the LaSelva Beach Water company, provided water to the developed neighborhoods in a five-mile strip along the Monterey Bay from 41st Avenue south to LaSelva Beach (Santa Cruz Sentinel 1942: 1, 1943: 1, 1952: 1, 1968: 3)

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# 4 Field Survey

## 4.1 Methods

**Archaeological Resources:** Dudek Archaeologist John Schlagheck, M.A., RPA, conducted an archaeological surface reconnaissance of all 11 components of the study area on May 6, 2020. Mr. Schlagheck conducted the reconnaissance using standard archaeological procedures and techniques. All field practices met the Secretary of Interior's standards and guidelines for a cultural resources inventory. The land area was surveyed in pedestrian transects with approximately 5-meter spacing. Where hard surfaces obscured the soil, Mr. Schlagheck closely examined the soil in adjacent areas. All field notes, photographs, and records related to the current study are on file at the Dudek office in Santa Cruz, California.

**Built Environment Resources**: During the surface reconnaissance for archaeological resources, John Schlagheck also completed a thorough photo documentation of all built environment elements within the study area. Dudek Architectural Historian Fallin Steffen, MPS, conducted an in-depth review of the photo documentation as part of preliminary assessment to determine if any built environment resources warranted historic significance evaluation. The photo documentation shows specific structural details to contextualize the built environment elements within the surrounding portion of the APE and areas adjacent to the APE. Ms. Steffen was able to view the structural details, spatial relationships, observed alterations, and examining any historic landscape features via the photo documentation of the APE. All field notes, photographs, and records related to the current study are on file at the Dudek office in Santa Cruz, California.

## 4.2 Results

### 4.2.1 Archaeological Resources

Dudek found no archaeological soil (midden) or material commonly used as raw materials for prehistoric tool manufacture such as chert or obsidian. Similarly, no other evidence for use of the study area during prehistoric times (such as charred faunal remains, marine shell, modified rocks, or charcoal) was observed. Other than the built environment elements discussed below, no historical period materials except modern debris (plastic, glass, and metal fragments) were found in the study area. Specific results of the reconnaissance by study area component are discussed below. As indicated in Section 1.6, new Santa Cruz ASR facility sites are not described given that there are no identified locations for these facilities at this time.

#### 4.2.1.1 Water Supply Augmentation Components

**ASR Facilities (4 Known Components)**

As indicated in Section 1.2, Project Description, there are no definitive sites identified to date for new ASR facilities, and therefore, site-specific conditions cannot be described for such sites.

The four Beltz ASR components are within the relatively flat coastal plain between the foothills of the Santa Cruz Mountains and the north shore of Monterey Bay. Very similar soil conditions exist in all four components. Specifically, the native soil within and adjacent to these components is gray brown sandy loam extensively mixed with modern fill material likely associated with facility construction and maintenance. In several areas, such as gravel/rock driveways, the modern fill constitutes 100% of the soil. Very high rodent activity within and near all four components provided excellent views of the soil and soil ejected from the subsurface.

**City/SVWD Intertie – New Pipeline and Pump Station (1 Component).** The route of this component trends north to south and follows La Madrona drive from the proposed pump station near the Mt. Hermon Road/Highway 1 interchange south to Sims Road. The proposed pump station site is on land that appears to have been mechanically leveled in the past. The area contains brown gray sandy loam with considerable rock content and modern debris. The presence of only light vegetation and rodent activity provided excellent views of the soil and material ejected from the subsurface.

Regarding the linear pipeline portion of this component, exposed soil along the west side of the La Madrona Drive provided excellent views of native soil. Over much of the length of the intertie, La Madrona Drive is cut into the native grade from a few feet to as much as 25 feet, with severe slopes rising west of the roadside. This indicates that much of the component is significantly below the native grade. This point is further illustrated by the presence of nearly vertical bedrock exposures just west of La Madrona Drive in numerous locations. Native soil was visible in several locations near the bedrock, but much of that material appears to have eroded down to lower elevations from the native grade above. Where La Madrona Drive is not cut into the slope, the soil is heavily mixed with modern fill material near the numerous private driveways. The native soil in this component is medium gray sandy loam with variable rock content. The component crosses two small unnamed east trending tributaries to Carbonera Creek, a perennial waterway that flows south, immediately east of Highway 17. The northernmost drainage is located approximately 700 feet south of Silverwood Drive, and the second drainage is about 0.5 miles further south at Via Vinca (road). Both drainages are crossed by concrete bridges with road surfaces approximately 20 feet above the bottom of the drainage bed. Both drainages contained minimal flowing water at the time of the survey.

**City/SqCWD/CWD Intertie – Soquel Village and Park Avenue Pipelines and McGregor Drive Pump Station Upgrade (2 Components).** Both of these components are on relative flat ground within or very near the Highway 1 right-of-way. The Soquel Village component is north of Highway 1 and crosses Soquel Creek at the Porter Street Bridge. West of the River, the proposed pipeline route reaches the central portion of Soquel Village via Walnut Street and Daubenbiss Avenue. In this area views of the soil included front yard areas and small areas within planting strips along the streets. Soil in these areas is a medium gray brown sandy loam mixed with potting soil, gravel, and crushed rock. East of Porter Street the proposed pipeline route follows Main Street to Soquel Drive. In this area, there are several undeveloped areas that provide very good views of the soil. Soil in these areas is medium gray sandy loam with some rocks.

The Park Avenue pipeline component includes Park Street south from Soquel Drive and under the Highway 1 overpass. The overpass is the only portion of Highway 1 (recorded resource P-44-000406) that intersects the APE; hence there is no actual conflict between this component and Highway 1. Over much of the length of Park Avenue, the road is cut into the native slope such that minor cut banks are present in several areas. Very good views of the soil were found throughout this component. The soil in this area is brown gray sandy loam mixed with imported materials and covered in some areas by landscaping treatments such as wood chips.

East of Park Avenue the pipeline follows the route of the McGregor Drive right of way south of Highway 1 to the McGregor Dive Pump Station on the southeast corner of McGregor Drive and entrance to New Brighton State Beach.

The State Beach entrance road, McGregor Drive, and the Pump Station pad all appear to be built up from the natural grade that slopes down moderately from Highway 1 to the south. The south edge of the Pump Station pad is a nearly vertical six-foot retaining wall and there is evidence of engineered fill on both the east and west sides of the pad.

**City/SQCWD/CWD Intertie – Freedom Boulevard and Valencia Road Pump Stations (2 Components).** The new pump station component at Freedom Boulevard is located just northeast of the Highway1/Freedom Boulevard interchange near the intersection of Freedom Boulevard and Soquel Drive. Since it is not clear which area adjacent to the intersection will be used for the new facility, the surveyor conducted a general surface reconnaissance at all four adjacent roadside areas. The soil in all locations was heavily disturbed sandy loam with considerable amounts of gravel and crushed rock.

The new pump station component at Valencia Road is located near the intersection of Valencia Road and Huntington Drive, which is a "T" intersection. There appears to be two adjacent locations for a new facility. Due to severe downslope at the north end of the intersection, the survey only included the area south of Huntington Drive and east of Valencia Road. This area appears minimally disturbed and likely contains mostly native soil. The soil is a medium gray sandy loam that was sterile for evidence of archaeological resources. Views of the soil in this location were excellent for the purpose of this reconnaissance.

#### 4.2.1.2 Surface Water Diversion Improvements

**Felton Diversion Improvements (1 Component)**

This component appears to have been built up from the west bank of the San Lorenzo River anywhere from a few feet to as much as 30 feet, making most of the working area of the facility completely artificial. The flat area where improvements are planned is clearly not in situ native soil. The submerged areas of the component also contain numerous at grade structures that serve to channelize water into the pump station when the intake is active. The surrounding soil is exposed on the north and south and appears to be mostly fill material with a recent cover of light vegetation.

**Tait Diversion and Coast Pump Station Improvements (1 Component)**

This component is situated between River Street and the west bank of the San Lorenzo River. The west bank of the river has undergone major bank stabilization efforts and flood control modification. This is evidenced by riprap, high quantities of engineered fill material extending from the riverbank to River street, and retaining walls surrounding the pump station on the north and east sides. On the east side of the pump station, facing the river, the ground appears to have been leveled from about 5 to 10 feet above the natural grade. The east bank of the river also appears highly modified by stabilization and flood control efforts but does not have infrastructure as close to the river channel. Areas of exposed soil on the west bank show mostly engineered fill material with some small areas of native soil possibly west of the large central building at the Coast Pump Station. In that area, rodent activity provided excellent views of the soil and soil ejected from the subsurface.

### 4.2.2 Built Environment Resources

Dudek identified and recorded two properties at least 45 years of age that are located within the noncontiguous project APEs, the Beltz 8 ASR facility site and the Tait Diversion and Coastal Pump Station combined facility. These built environment properties required recordation and evaluation for historical significance to assess potential impacts to CEQA historical resources and assess potential adverse effects under Section 106 for the Proposed Project. The Significance Evaluation (Section 5) provides a detailed physical description of structures located at each site and a significance evaluation under NRHP, CRHR, Santa Cruz City, and SCCHRI criteria. The complete DPR523 form set for each resource is located in **Appendix E.** As shown in Table 9 below, although there are two other study area components, the City/SqCWD/CWD intertie (Soquel Village and Park Avenue pipelines), that likely contain structures over the age of 45, these components are analyzed in this report at a programmatic level and therefore not formally recorded or evaluated for historical significance in this report. Section 6 of this report addresses necessary mitigation measures that will be required for these two study area components should they be pursued in the future.

## Table 9. Summary Table Built Environment Properties

| Study Area Components | CEQA Environmental Review Level | Section 106 Level Analysis/APE delineated | Age of Built Environment Resource | Formally Evaluated as part of this report | Figure Number (Appendix A) |
|---|---|---|---|---|---|
| ASR Facilities | | | | | |
| New ASR Facilities | Programmatic | No | Unknown | No | NA |
| Beltz 8 ASR Facility | Project | Yes | 1971 facility modification 1985, 1998 | Yes | 4a |
| Beltz 9 ASR Facility | Project | Yes | 1998 | No | 4b |
| Beltz 10 ASR Facility | Project | Yes | 2004 | No | 4c |
| Beltz 12 ASR Facility | Project | Yes | 2012 | No | 4d |
| City/SVWD Intertie – New Pipeline and Pump Station | Programmatic | No | Proposed all new components; no existing structures | No | 4e |
| City/SqCWD/CWD Intertie - Soquel Village Pipeline | Programmatic | No | Existing pipeline, likely over 45 years old | No | 4f |
| City/SqCWD/CWD Intertie - Park Avenue Pipeline and McGregor Drive Pump Station Upgrade | Programmatic | No | Existing pipeline, likely over 45 years old | No | 4f |
| City/SqCWD/CWD Intertie - Freedom Boulevard Pump Station | Programmatic | No | Proposed all new components; no existing structures | No | 4g |
| City/SqCWD/CWD Intertie - Valencia Road Pump Station | Programmatic | No | Proposed all new components; no existing structures | No | 4g |
| Felton Diversion Improvements | Programmatic | Yes | 1976 | No | 4h |
| Tait Diversion and Coast Pump Station Site | Programmatic | Yes | c.1934, altered 1961 and 1984 (Tait Diversion) 1929 (Coast Pump Station) | Yes | 4i |

# 5 Significance Evaluation (Built Environment)

This section provides descriptions and evaluations of the Beltz 8 ASR facility, and the Tait Diversion and Coast Pump Station combined facility under the NRHP, CRHR, and City or SCCHRI designation criteria. A physical description of each property and its development history is provided below. The significance evaluation was prepared by Dudek Architectural Historians Fallin Steffen, MPS, and Kathryn Haley, MA, who both meet the Secretary of the Interior's Professional Qualification Standards for architectural history. The complete DPR523 form set for each property is located in **Appendix E.**

## 5.1 Beltz 8 ASR Facility

The Beltz 8 ASR facility is located on a municipal property located in the County and demonstrates a layered development history. The first well on the site, Beltz 6, was developed between 1952 and 1967 during the Beltz Water Company operation period before the City acquired the system. The Iron and Manganese Removal Plant was designed by Kingman Engineers and completed in 1971 and subsequently expanded in 1985. Beltz 6 was damaged in the 1989 Loma Prieta earthquake and later replaced by Beltz 8 in 1998. Presently the site contains the Iron and Manganese Removal Plant, Beltz 8, and limited landscaping (NETR 2020; SCWD 1967: D).

### 5.1.1 Site Access

The Beltz 8 ASR facility is located on a mid-block parcel surrounded by a chain-link fence. The fence is fitted with privacy slats, secures the perimeter of the entire property, and features a recessed gated entry to the site, which can be accessed by a private drive way off of 38th Avenue just north of Roland Drive (Exhibit 8).

**Exhibit 8.** Beltz 8 access driveway off 38th Avenue showing point of entry (red arrow), view looking northwest (Google Earth 2020).

## 5.1.2 Iron and Manganese Removal Plant (1971)

The Iron and Manganese Removal Plant contains a Control Building, two pressure filters, a combination aerator and sump pump, and a wash water recovery tank.

### Control Building

The Control Building is a simple utilitarian-style building constructed from flat concrete bricks that features a gabled roof complete with vertical wood siding in the gable end (Exhibits 9 and 10). The 1985 addition to the south end of the building is also constructed of concrete brick and features a shed roof that extends from the south elevation of the building. Entry to the building is accessed via one of three simple metal doors, two of which feature a single small window. Otherwise, the building does not contain any fenestration. Metal conduit is present in sizable quantities on the exterior painted surface of the building.


**Exhibit 9.** Control Building, east elevation, view looking west (IMG_0217).


**Exhibit 10.** Control Building, west elevation, view looking southeast (IMG_0222).

**Pressure Filters**

The two cylindrical pressure filters are cylindrical tanks that measure 8 feet by 34 feet (Exhibit 11). They are situated to the north of the control building and each feature a concrete pad foundation.

**Exhibit 11.** Two cylindrical pressure filters, view looking east (IMG_0220).

### Aerator and Sump Pump

The irregular-shaped aerator sump pump stands approximately two stories high and is housed in metal sheeting (Exhibit 12).

**Exhibit 12.** Aerator and Sump Pump, view looking northwest (IMG_0218).

### Wash Water Recovery Tank

The cylindrical wash water recovery tank stands approximately three stories tall and is constructed of metal sheets that have been riveted together to form a continuous surface (Exhibit 13). A release door is visible at the ground level, and the top of the structure is accessed via an enclosed ladder located on the west side of the structure.

**Exhibit 13.** Wash Water Recovery Tank, view looking north (IMG_0219).

### 5.1.3 Beltz 8 (1998)

Beltz 8 is located on the eastern side of the irregularly shaped parcel. The visible portions of the well are simply metal piping extending above and then back beneath the ground (Exhibit 14).

**Exhibit 14.** Beltz 8, view looking northeast (IMG_0215).

### 5.1.4 Identified Alterations

The following alterations were identified during a review of the photographs taken during the pedestrian survey and during the course of archival research. Unless indicated, the dates of these alterations are unknown.

**Iron and Manganese Removal Plant (1971, expanded 1985)**

- Expansion of plant including an addition to the control building, 1985 (Kennedy/Jenks Engineers 1985: G-4)
- Removal of wastewater treatment tank
- Various mechanical, pump, and pipeline upgrades

**Overall Site**

- Installation of Beltz 8 in 1998 (Dames and Moore 1998: C101)
- Removal of original Beltz 6, associated appurtenances, and well house structure

### 5.1.5 NRHP/CRHR Statement of Significance

**NRHP Criterion A: associated with events that have made a significant contribution to the broad patterns of our history**

**CRHR Criterion 1: is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.**

Water management infrastructure associated with water districts is a common property type throughout the County and the State of California. Components of water infrastructure systems have been considered significant under NRHP Criterion A and CRHR Criterion 1 when associated with trends and events that have made a significant contribution to the broad patterns of our history, particularly in regional agricultural or local economic development.

The Beltz system did not become a part of the Santa Cruz municipal water system until 1967; however, these structures constitute early- to mid-twentieth century additions to the system. While these types of systems may have influenced or supported the growth of communities such as Live Oak, this is far too common an association to merit a blanket conclusion of historical significance under NRHP Criterion A or CRHR Criterion 1 within the context of municipal water management systems. At some point in the past, all forms of historic-era infrastructure were associated locally or regionally with municipal growth or economic development, actual or intended. It is often exceedingly difficult to prove whether historic-era infrastructure associated with recognizable growth actually caused or merely accommodated the growth. Furthermore, although the Beltz system dates back to 1936 and was the pioneering water conveyance system in the area, historical aerial photographs suggest that the first well located on the Beltz 8 property, Beltz 6, was not developed until 1952 and 1967. This suggests that the Beltz 6 facility was not developed during the initial years of the Beltz system development in the 1930s, but rather, it was installed as an expansion to the existing system during the post-war period to meet increased demand for water within the service area as the population of the County grew by roughly 240% between 1940 and 1970. Historical aerial photographs suggest that many of the small agricultural properties and large estates within the Beltz service area were subdivided to accommodate new, substantial residential development between 1952 and 1964, resulting in an increase from roughly 900 Beltz service connections in 1955 to 1,500 by 1967 As the Beltz system constituted the only water delivery system servicing the geographic area, the nearly 60% increase in the number of residential service connections between 1955 and 1967 suggests that the construction of Beltz 6 was directly related to an increased demand for supply and to enable continued development within the service area (Santa Cruz Sentinel 1947: 1, 1955: 18, 1967a: 4, 1967b: 5, 1967c: 24; SCPL n.d.: 1; UCSB 2020).

Therefore, the Beltz 8 facility is not associated with any extraordinary event or events occurring within the context of early County development that would distinguish the structures from the vast array of water management systems dotting the California landscape. Moreover, research into the history of the Beltz 8 facility revealed no evidence suggesting that the structures on site are associated with an alternative, more unique event or pattern of events considered historically significant. For these reasons, the Beltz 8 facility does not appear to meet NRHP Criterion A or CRHR Criterion 1.

**NRHP Criterion B: associated with the lives of significant persons in our past.**

**CRHR Criterion 2: is associated with the lives of persons important in our past.**

To be found eligible under Criterion B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research failed to indicate any such direct association between individuals that are known to be historic figures at the national, state, or local level and the Beltz 8 facility.

The Beltz 8 facility was subsequently modified after it was first constructed between 1952 and 1967 by several individuals and early regional water management developers in order to provide municipal water in the Santa Cruz region. As such, the facility represents the collective efforts of many individuals, rather than the work of any single individual. Therefore, the facility is not known to have any historical associations with people important to the nation's or state's past. Due to a lack of identified significant associations with important persons in history, the facility does not appear eligible under NRHP Criterion B or CRHR Criterion 2.

**NRHP Criterion C: embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.**

**CRHR Criterion 3: embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.**

The Beltz 8 property was established between 1952 and 1967 as the sixth well site in the Beltz Water system; however, subsequent additions to the site have resulted in the property not retaining any buildings or infrastructure from this initial period of construction under Beltz management. Major alterations to the site, including the construction of an Iron and Manganese Removal Plant in 1972 and the abandonment of Beltz 6, have altered the setting of the site and caused it to lose integrity of setting, feeling, and association. Subsequent alterations to the Removal Plant as a result of an expansion in 1985, including a large addition to the Control Building, have altered this phase of the site's development, causing integrity in the areas of design, materials, and workmanship to be diminished. Additionally, the design for the facility lacks sufficient engineering distinction, does not appear to be distinctive or innovative in design, and the remaining features located on the site are distinctly utilitarian in design. They are also not representative of a known style aesthetic and do not possess high artistic values.

Overall, the Beltz 8 facility has experienced multiple alterations over time in order to accommodate modern equipment and ensure ongoing use. It is representative of a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular well or treatment plant facility type. Consequently, the Beltz 8 appears to lack significance under NRHP Criterion C or CRHR Criterion 3.

**NRHP Criterion D: have yielded, or may be likely to yield, information important in history or prehistory.**

**CRHR Criterion 4: has yielded, or may be likely to yield, information important in prehistory or history.**

There is no evidence to indicate that the subject property is likely to yield any additional information important to prehistory or history beyond what is already known. The subject property is also not associated with an archaeological site or a known subsurface cultural component. Therefore, the subject property does not appear eligible under NRHP/CRHP Criterion D/4.

### 5.1.6 County of Santa Cruz Statement of Significance

1. **The resource is associated with a person of local, state or national historical significance.**

   As stated in Criterion B/2, archival research did not reveal an association between the Beltz 8 facility and any persons who significantly contributed to the development of the city, state, or nation. Therefore, the facility does not appear eligible under County Criterion 1.

2. **The resource is associated with an historic event or thematic activity of local, state or national importance.**

   The Beltz 8 facility is not associated with any extraordinary event or events occurring within the context of early County development that would distinguish the structures from the vast array of water management systems dotting the California landscape. Moreover, research into the history of the Beltz 8 facility revealed no evidence suggesting that the structures on site are associated with an alternative, more unique event or pattern of events considered historically significant. For these reasons, the Beltz 8 facility does not appear to be directly associated with events that have made a significant contribution to the development of water infrastructure in the County. Therefore, the facility does not appear eligible under County Criterion 2.

3. **The resource is representative of a distinct architectural style and/or construction method of a particular historic period or way of life, or the resource represents the work of a master builder or architect or possesses high artistic values.**

   As discussed in Criterion C/3, the Beltz 8 facility has experienced multiple alterations over time in order to accommodate modern equipment and ensure ongoing use. It is representative of a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular well or treatment plant facility type. Therefore, the facility does not appear eligible under County Criterion 3.

4. **The resource has yielded, or may likely yield, information important to history.**

   As discussed under Criterion D/4, there is no evidence to indicate that the subject property is likely to yield any additional information important to prehistory or history beyond what is already known. The subject property is also not associated with an archaeological site or a known subsurface cultural component. Therefore, the facility does not appear eligible under County Criterion 4.

### 5.1.7 Integrity Discussion

In addition to not meeting any of the significance Criteria, the subject Beltz 8 facility lacks historic integrity. The structures now located on the site are still located in their historic location, retain their historic alignment, and continue to provide water for the municipal water supply. However, the facility shows evidence of evolution over time to meet rising supply demands, including the addition on the Control Building, removal of a wastewater treatment tank, and the replacement of the original Beltz 6 well on the site with a new well in 1998. As a result of this expansion, the facility has lost the integrity of setting, association, design, materials, and workmanship.

### 5.1.8 Summary of Evaluation Findings

In conclusion, the Beltz 8 facility does not appear eligible for listing in the NRHP, the CRHR, or the SCCHRI due to a lack of historical associations, architectural merit, and compromised integrity. As such, this property does not appear to be a historic property under Section 106 of the NHPA or a historical resource under CEQA.

## 5.2 The Tait Diversion and Coast Pump Station

The Tait Diversion and Coast Pump Station is a combined facility located on municipal property within the City. The property demonstrates a layered development history. The Coast Pump Station was added to the larger City system in the late 1920s. The pump station was completed in 1929 as the second of two municipal pumping stations funded by the City in roughly the same location beside the San Lorenzo River north of present-day Highway 1. Archival newspaper sources indicate that a diversion was present at this site dating back to 1934; however, the Tait Diversion as it is now known received a new intake in 1961, which was then reconfigured in 1983. The Tait Diversion and Coast Pump Station combined facility contains three associated built environment structures: the Coast Pump Station (1928), the Meter Shop (c.1964–1968), and Tait Diversion (c.1934).

### 5.2.1 Site Access

The Tait Diversion and Coast Pump Station are situated at 1214 River Street beside the San Lorenzo River. A chain-link fence fitted with barbed wire and privacy slats along River Street secures the perimeter of the property and features a recessed gated entry to the paved access road (Exhibit 15). The access road leads past the Meter Shop on the left of the drive before curving to the north into an open paved lot. The Coast Pump Station is located on the far end of the lot. The property also contains a modern shed beside the Meter Shop, a shipping container, and a large generator.

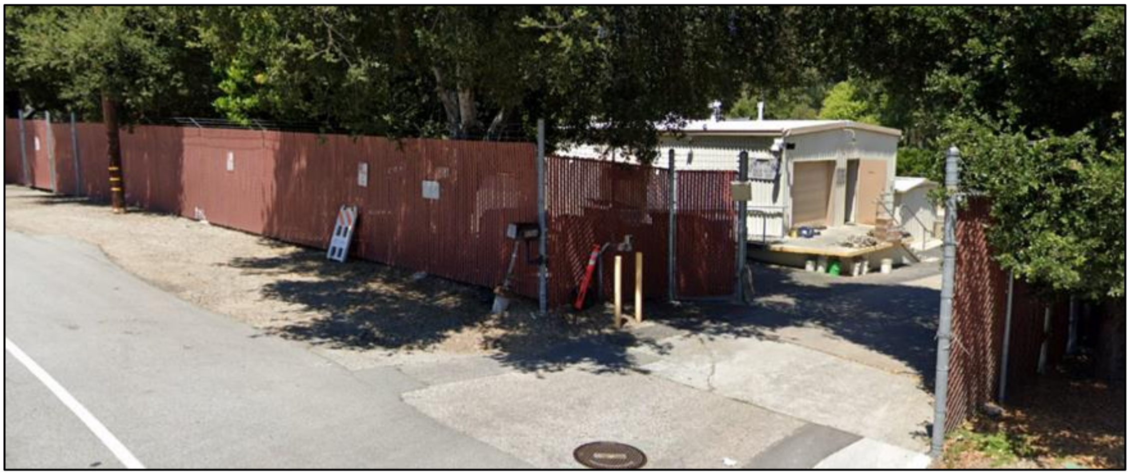

**Exhibit 15.** Access gate to the Coast Pump Station and Tait Diversion Site off River Street, view looking north (Google Earth 2020).

Overall, the site is predominantly paved except for open green areas containing native flora similar to the other nearby areas beside the river. The Tait Diversion is located due north of the Coast Pump Station on the San Lorenzo River and can be accessed only on foot (Exhibit 16).

**Exhibit 16.** Path down from Coast Pump Station (pictured) to Tait Diversion, view looking south (IMG_0162).

## 5.2.2 Coast Pump Station (1929)

The Coast Pump Station is a rectangular, industrial-style building that features ribbed metal siding and a side-gable roof clad in corrugated metal (Exhibit 17). A square, shed-roof garage addition extends from the southwest elevation of the building and also features ribbed metal cladding and a corrugated roof.

**Exhibit 17.** The Coast Pump Station, southeast (main) elevation view looking northwest (IMG_0185).

The southeast (main) elevation features a narrow metal rollup door and a simple entry door with a single square window; the garage addition also features a wide rollup door on this elevation. Large pipes emerge from the ground on the northeast elevation and are sheltered by a shed roof extending from this elevation. The side and rear of the building do not have any additional doors and windows (Exhibit 18).

**Exhibit 18.** Rear of Coast Pump Station showing view looking northeast (IMG_0162).

## 5.2.3 Meter Shop (c.1964-1968)

The Meter Shop building is a rectangular, industrial-style building that features 'Stran-steel' brand ribbed metal siding and a front-gable roof clad in corrugated metal (Exhibit 19). The foundation of the building is constructed from concrete masonry units. The southeast (main) elevation features a small loading dock, a narrow metal rollup door and a simple solid entry door. The entry door is accessed via a set of six side-facing steps fitted with a metal pipe railing. The northeast elevation features a single aluminum sliding window (Exhibit 20).


**Exhibit 19.** Meter Shop, southeast (main) elevation, view looking north (IMG_0181).

**Exhibit 20.** Meter Shop, northeast elevation, view looking west (IMG_0184)

## 5.2.4 Tait Diversion (c.1934, new intake added 1983)

The Tait Diversion is presently comprised of a weir across the San Lorenzo River formed from irregularly shaped concrete sections arranged in a line that disappears into the thick vegetation on the opposite bank of the river. On the west bank of the river, a sizable concrete intake installed in 1983 features a heavy metal grate over both the inflow and the outflow, and the top of the structure is covered by metal decking (Exhibits 21 and 22).

**Exhibit 21.** Tait Diversion, overview showing the 1983 intake in the foreground and the remaining section of the original concrete diversion dam stretching across the San Lorenzo, view looking north (IMG_0175).

**Exhibit 22.** Tait Diversion, remaining section of the original concrete diversion dam, view looking north (IMG_0165).

## 5.2.5 Identified Alterations to the Coast Pump Station and Tait Diversion Facility

The following alterations were identified during a review of the photographs taken during the pedestrian survey and during the course of archival research. Unless indicated, the dates of these alterations are unknown.

**Coast Pump Station** (1929)

- 20-foot by 30-foot garage addition, 1979 (SCWD 1979a: 2)
- Surge arrestor tank added behind rear of building (SCWD 1979b: 1)
- Filter tanks removed and site paved, between 1968 and 1979 (NETR 2020; SCWD 1979b: 2)
- Building clad in metal siding
- Roof covered in corrugated metal sheets
- Various mechanical, pump, and pipeline upgrades

**Meter Shop** (c.1968)

- Installation of new lights and security cameras on exterior of building

**Tait Diversion** (c.1934)

- New intake structure on east bank, 1960 (Brown and Caldwell 1960)
- New intake structure on west bank and notch existing dam, 1983 (Dewante and Stowell 1983: 3)

### 5.2.6 NRHP/CRHR Statement of Significance

**NRHP Criterion A: associated with events that have made a significant contribution to the broad patterns of our history.**

**CRHR Criterion 1: is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.**

Water management infrastructure associated with municipal water districts is a common property type throughout the County and the State of California. Components of water infrastructure systems have been considered significant under NRHP Criterion A and CRHR Criterion 1 when associated with trends and events that have made a significant contribution to the broad patterns of our history, particularly in regional agricultural or local economic development. Specifically, the Laguna Creek Dam, which is part of the County's municipal water system, is one such structure. As a well-preserved masonry water management structure dating to 1890, it is a physical example of pioneering water management infrastructure in California. As such, the Laguna Creek Dam has been recommended as individually eligible for listing in the NRHP and the CRHR under Criterion A/1 for its association with early advances in water management in California, specifically through creation of the City's first municipal water distribution system that resulted in supplying the community of Santa Cruz with municipal water services and led to subsequent expansion of water infrastructure in the region. The period of significance for that dam is 1890, the year it was initially constructed.

While the Tait Diversion and Coast Pump Station are part of the County's municipal water system, these structures are early to mid-twentieth century additions to the system. While these types of systems may have influenced or supported the growth of local communities, this is far too common an association to merit a blanket conclusion of historical significance under NRHP Criterion A or CRHR Criterion 1 within the context of municipal water management systems. At some point in the past, all forms of historic-era infrastructure were associated locally or regionally with municipal growth or economic development, actual or intended. It is often exceedingly difficult to prove whether historic-era infrastructure associated with recognizable growth actually caused or merely accommodated the growth.

The Tait Diversion and Coast Pump Station combined facility is not associated with any extraordinary event or events occurring within the context of early County development that would distinguish the structure from the vast array of water management systems dotting the California landscape. Moreover, research into the history of the Tait Diversion and Coast Pump Station combined facility revealed no evidence suggesting that the structures are associated with an alternative, more unique event or pattern of events considered historically significant. For these reasons, the Tait Diversion and Coast Pump Station combined facility does not appear to meet NRHP Criterion A or CRHR Criterion 1.

**NRHP Criterion B: associated with the lives of significant persons in our past.**

**CRHR Criterion 2: is associated with the lives of persons important in our past.**

To be found eligible under Criterion B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research failed to indicate any such direct association between individuals that are known to be historic figures at the national, state, or local level and the Tait Diversion and Coast Pump Station combined facility. The Tait Diversion is named for a Water Superintendent R.S. Tait, who was instrumental in the construction of both municipal pumping plants on the San Lorenzo River. While he was an advocate of the project, the plant does not appear to be the site at which Tait conducted the work for which he is known, and furthermore, the assignment of Tait's name to the diversion appears to be a relatively recent addition made at some point after the 1980s.

The Coast Pump Plant and the Tait Diversion were subsequently modified after they were first constructed in 1929 and c.1934, respectively, by several individuals and early regional water management developers, in order to provide municipal water in the Santa Cruz region. As such, the facility represents the collective efforts of many individuals, rather than the work of any single individual. Therefore, the facility is not known to have any historical associations with people important to the nation's or state's past. Due to a lack of identified significant associations with important persons in history, the facility does not appear eligible under NRHP Criterion B or CRHR Criterion 2.

**NRHP Criterion C: embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.**

**CRHR Criterion 3: embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.**

Overall, the Tait Diversion and Coast Pump Station combined facility itself is a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular combination pumping plant and diversion dam facility type. The Coast Pump Station was completed in 1929; however, major subsequent alterations, including the construction of a large addition in 1979, cladding the entire building with ribbed metal siding covering the original fenestration patterns, and fitting the original roof with a gable roof clad in corrugated metal material obscuring the trussed roof shape, have significantly diminished the integrity of design, materials, and workmanship. The Tait Diversion has also seen multiple alterations and additions over time, including the installation of two different intake structures in 1960 and 1984, that have eliminated the majority of the original early 1930s construction materials once composing the resource. This has caused it to lose all integrity in the areas of design, materials, and workmanship. Additionally, the designer of the Coast Pump Station, City Engineer Ray Fowler, does not appear to have reached the level of notoriety to be considered a master in the field of engineering, and the original designer of the Tait Diversion is unknown. Overall, the design for the Tait Diversion and Coast Pump Station do not appear to be distinctive or innovative in design.

Overall, the combined facility has experienced multiple alterations over time in order to accommodate modern equipment and ensure ongoing use. It is representative of a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular pumping plant or diversion dam facility type. Consequently, the Tait Diversion and Coast Pump Station appear to lack significance under NRHP Criterion C or CRHR Criterion 3.

**NRHP Criterion D: have yielded, or may be likely to yield, information important in history or prehistory.**

**CRHR Criterion 4: has yielded, or may be likely to yield, information important in prehistory or history.**

There is no evidence to indicate that the subject property is likely to yield any additional information important to prehistory or history beyond what is already known. The subject property is also not associated with an archaeological site or a known subsurface cultural component. Therefore, the subject property does not appear eligible under NRHP/CRHP Criterion D/4.

### 5.2.7 City of Santa Cruz Statement of Significance

**1. Recognized as a significant example of the cultural, natural, archaeological, or built heritage of the city, state, or nation.**

The Coast Pump Station does not constitute the first, last, or only pumping plant located in the City or County. The remaining original section of the Tait Diversion possibly dating to the early 1930s does not constitute the first, last, or only surface diversion in the history of Santa Cruz water development and has also been subsequently modified to a degree that it is unrecognizable and no longer retains historic integrity. Neither component of the site can be called a significant example of their facility type because each constitutes a conglomeration of construction methods and lacks sufficient engineering distinction. Therefore, the facility does not appear eligible under City Criterion 1.

**2. Associated with a significant local, state, or national event.**

Archival research did not find any associations with events that have made a significant contribution to the broad patterns of local or regional history. While the subject property was developed overtime in conjunction with the development of Santa Cruz water infrastructure, the development of the Coast Pump Station was the second plant of this kind in the City and is a product of growth and expansion instead of the implementation of a new technology for this facility type. The Tait Diversion and Coast Pump Station does not constitute the first, last, or only such facility pumping plant located in the City or County. Therefore, the property does not appear eligible under City Criterion 2.

**3. Associated with a person or persons who significantly contributed to the development of the city, state, or nation.**

Archival research failed to indicate any such direct association between individuals that are known to be historic figures at the national, state, or local level and the Tait Diversion and Coast Pump Station combined facility. The Tait Diversion is named for Water Superintendent R.S. Tait, who was instrumental in the construction of both municipal pumping plants on the San Lorenzo River. While he was an advocate of the project, the plant does not appear to be the site at which Tait conducted the work for which he is known, and furthermore, the assignment of Tait's name to the diversion appears to be a relatively recent addition made at some point after the 1980s.

The Coast Pump Plant and the Tait Diversion were subsequently modified after they were first constructed in 1929 and c.1934, respectively, by several individuals and early regional water management developers, in order to provide municipal water in the Santa Cruz region. As such the facility represents the collective efforts of many individuals, rather than the work of any single individual. Therefore, as the facility is not known to have any historical associations with people important to the nation's or state's past, the facility does not appear eligible under City Criterion 3.

4. **Associated with an architect, designer, or builder whose work has influenced the development of the city, state, or nation.**

   The designer of the Coast Pump Station, City engineer Ray Fowler, does not appear to have reached the level of notoriety to be considered a master in the field of engineering, and the original designer of the Tait Diversion is unknown. Therefore, for the reasons stated above, the facility does not appear eligible under City Criterion 4.

5. **Recognized as possessing special aesthetic merit or value as a building with quality of architecture and that retains sufficient features showing its architectural significance.**

   Overall, the Tait Diversion and Coast Pump Station combined facility itself is a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular combination pumping plant and diversion dam facility type. The Coast Pump Station was completed in 1929; however, major subsequent alterations, including the construction of a large addition in 1979, cladding the entire building with ribbed metal siding covering the original fenestration patterns, and fitting the original roof with a gable roof clad in corrugated metal material obscuring the trussed roof shape, have significantly diminished the integrity of design, materials, and workmanship. The Tait Diversion has also seen multiple alterations and additions over time, including the installation of two different intake structures in 1960 and 1984, that have eliminated the majority of the original early 1930s construction materials once composing the resource. This has caused it to lose all integrity in the areas of design, materials, and workmanship. As such, the facility does not appear eligible under City Criterion 5.

6. **Recognized as possessing distinctive stylistic characteristics or workmanship significant for the study of a period, method of construction, or use of native materials.**

   After its completion in 1929, the Coast Pump Station was subsequently renovated and fitted with metal ribbed siding and corrugated metal roofing material. As a result, the building has been modified to the extent that it no longer retains historic integrity and is no longer able to convey significance dating to this period. After its completion c.1934, the Tait Diversion has seen multiple upgrades to intensify its productivity overtime and as a result has been modified to the extent that it no longer retains historic integrity and is no longer able to convey significance dating to this period. Therefore, the facility does not appear eligible under City Criterion 6.

7. **Retains sufficient integrity to accurately convey its significance.**

   Due to a number of large-scale alterations resulting in the obscuring of historic materials and design, the Tait Diversion and Coast Pump Station are no longer capable of conveying the historic significance of a property dating to the early-twentieth-century period of water development in Santa Cruz. Therefore, the facility does not appear eligible under City Criterion 7.

### 5.2.8 Integrity Discussion

In addition to not meeting any of the significance Criteria, the Tait Diversion and Coast Pump Station lacks historic integrity. The structures of the Tait Diversion and Coast Pump Station combined facility are still located in their historic location, retain their historic alignment, and continue to provide water for the municipal water supply. Both features have been heavily modified and now include modern construction materials that obscure the historic materials, in some cases entirely. This has caused the loss of integrity in the areas of design, material, workmanship, feeling, and setting.

### 5.2.9 Summary of Evaluation Findings

In conclusion, the Tait Diversion and Coast Pump Station do not appear eligible for listing in the NRHP, the CRHR, or on the City of Santa Cruz Historic Building Survey due to a lack of historical associations, architectural merit, and compromised integrity. As such, these properties do not appear to be historic properties under Section 106 of the NHPA or historical resources under CEQA.

# 6 Impacts Analysis

This section contains the CEQA evaluation of potential environmental impacts associated with the Proposed Project related to cultural and tribal cultural resources. The section identifies the standards of significance used in evaluating the impacts, describes the methods used in conducting the analysis, and evaluates the Proposed Project's impacts and contribution to significant cumulative impacts, if any are identified.

## 6.1 Thresholds of Significance

The standards of significance used to evaluate the impacts of the Proposed Project to cultural resources and tribal cultural resources are based on statutory language found in Public Resources Code Sections 21083.2(a), 21084.1, 21084.2, CEQA Guidelines Section 15064.5(b), Appendix G of the CEQA Guidelines, and the City of Santa Cruz CEQA Guidelines, as listed below. A significant impact would occur if the Proposed Project would:

A. Cause a substantial adverse change in the significance of a historical resource pursuant to Section15064.5.
B. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section15064.5.
C. Disturb any human remains, including those interred outside of dedicated cemeteries.
D. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074.

## 6.2 Analytical Methods

The following analysis considers whether the Proposed Project would cause cultural resource or tribal cultural resource impacts, considering the City's Standard Construction Practices (described in Section 1.2.5, Standard Operational and Construction Practices). Methods used to identify the presence of archaeological and/or built environment CEQA historical resources in the study area are presented in detail in this technical report. In summary, efforts to identify cultural resources consisted of conducting a records search, background property specific research, Native American coordination, historic advocacy group correspondence, creation of a historic context, field survey of the study area, and significance evaluations (described in Sections 2 through 5). This data has been analyzed and used in the CEQA evaluation of the Proposed Project included in this section.

### Historical Resources

Projects can result in a substantial adverse change in the significance of a historical resource if they would cause physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (State CEQA Guidelines Section 15064.5). No built environment properties that qualify as CEQA historical resources were identified in the study areas for project components. A few of the programmatic component sites contain a building or structure that is 45 years old or older and their eligibility for listing at the national, state, or local level is unknown. As such, mitigation is included that will provide for evaluation of those sites when those components are pursued in the future. Potential impacts to built environment historical resources for both project and programmatic components are detailed below.

## Archaeological Resources

Archaeological sites are usually adversely affected only by physical destruction or damage that can be caused by grading and excavation, trenching, weather-induced erosion, etc. Impacts to archaeological resources and human remains most often occur as the result of excavation or grading within the vertical or horizontal boundaries of a significant archaeological site. Archaeological resources may also suffer impacts as the result of project activity that increases erosion, or increases the accessibility of a surface resource, and thus increases the potential for vandalism or illicit collection. Because archaeological resources often are buried or cannot be fully defined or assessed on the basis of surface manifestations, substantial ground-disturbing work may have the potential to uncover previously unidentified resources, including archaeological deposits and human remains. As precise fill depths may not be known in all cases, it must be assumed that any ground-disturbing activities in any portion of the study area where development will occur could potentially affect unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources.

## Application of Relevant Standard Practices

The Proposed Project includes standard construction practices (see Section 3.4.5.2, Standard Construction Practices), that the City would implement to avoid or minimize effects to archaeological resources and human remains. These practices and their effectiveness in avoiding and minimizing effects are described below.

If archaeological resources (sites, features, or artifacts) are exposed during construction, Standard Construction Practice #24 requires construction activities to stop within a 100 feet of any finds, temporary flagging around the resources, and evaluation of the significance of the finds by a qualified archaeologist. If the archaeologist observes the discovery to be potentially significant under CEQA, preservation in place or additional treatment may be required. This measure is somewhat effective in that it requires work stoppage to evaluate the significance of a potential archaeological resource; however, it stops short of specifying how to appropriately treat such a significant resource, if found.

If human remains are exposed during construction, Standard Construction Practice #25 requires the implementation of California laws that protect Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. The legal requirements are contained in Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the California Public Resources Code. These laws are effective in that they require construction work to stop, notification of the lead agency staff and County Coroner, notification of the NAHC and the MLD, and the appropriate treatment of the remains. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

If the Proposed Project would have potentially significant impacts even with the implementation of the above standard construction practices, the impact analysis identifies mitigation measures. The mitigation measures developed to address impacts to unique archaeological resources, historical resources of an archaeological nature, and subsurface tribal cultural resources addresses potential impacts both to identified archaeological resources, if any, and to archaeological resources that might be discovered during construction.

# 6.3 Project Impact Analysis

## 6.3.1 Impacts

This section provides a detailed evaluation of cultural resources and tribal cultural resource impacts associated with the Proposed Project.

**Impact CUL-1: Historic Built Environment Resources (Significance Standard A).** Construction of some of the Proposed Project infrastructure components could cause a substantial adverse change in the significance of historical built environment resource. **(Less than Significant with Mitigation)**

**Water Rights Modifications**

The water rights modifications would not directly result in construction activities that could damage or otherwise alter historical built environment resources. Given that, the water rights modifications would not result in direct impacts to historical built environment resources, as defined in State CEQA Guidelines Section 15064.5, and as a result would not cause a substantial adverse change in the significance of such a resource. Therefore, this project component of the Proposed Project would have no direct impacts.

The following analysis evaluates the potential indirect impacts to historic built environment resources as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

**Infrastructure Components**

The Proposed Project includes infrastructure components including ASR, water transfers and exchanges and associated intertie improvements, and surface water diversion improvements. Operation of these components, involving the movement of water in pipelines and the pumping and extraction of water into and out of groundwater basins would not have the potential to impact historic built environment resources and therefore operation of these components is not further evaluated. However, construction of these infrastructure components would have the potential to impact historic built environment resources if such resources are present and therefore construction impacts are further evaluated below.

<u>Aquifer Storage and Recovery Facilities</u>

The Proposed Project includes new ASR facilities that could be installed within the Santa Cruz Mid-County Groundwater Basin inside and outside the areas served by the City, and in the Santa Margarita Groundwater Basin outside the areas served by the City. ASR would include new ASR facilities at unidentified locations and Beltz ASR facilities at the existing Beltz well facilities, which are analyzed below.

**New ASR Facilities.** Given that specific locations for these facilities have not been identified at this time, information about the potential for historical built environment resources is not fully known. In consideration of the region and property options for the proposed ASR facilities, there is a low likelihood of finding historical built environment resources eligible for listing in the NRHP, CRHR or SCCHRI at the eventual sites for new ASR facilities. Regardless, if historical built environment resources are discovered on these sites, construction of new ASR facilities could cause a substantial adverse change in the significance of a historical built environment resource. Therefore, this programmatic component of the Proposed Project could have a potentially significant impact on a historical built environment resource.

Implementation of MM-CUL-1a and 1b would avoid a substantial adverse change in the significance of a historical built environment resource by requiring: a records search and potential site survey on the new ASR site(s) to confirm that there is no potential for historical built environmental resources to be present; preparation of a Historic Resources Evaluation Report (HRER) for properties 45 years old or older that could be impacted during construction; and avoidance of any identified significant resources or implementation of design in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties such that the historical resource continues to convey its historical significance. Therefore, implementation of MM-CUL-1a and 1b would reduce potentially significant impacts of this programmatic component on historical built environment resources to a less-than-significant level.

**Beltz ASR Facilities.** Dudek conducted background research and a CHRIS records search within 0.25 miles of the Beltz ASR sites. No previously recorded or evaluated built environment resources were identified on these sites. Of the four sites (Beltz 8, 9, 10, and 12 ASR sites), the Beltz 8 ASR site, was found to contain buildings and structures over the age of 45 years that required evaluation under NRHP, CRHR, and Santa Cruz County significance criteria. The Beltz 8 ASR site and facility was not recommended as eligible for listing in the NRHP, the CRHR, or the SCCHRI due to a lack of historical associations, architectural merit, and compromised integrity, as described in Section 5 of this report. As such, this property is not a historic property under Section 106 of the NHPA or a historical resource under CEQA. Implementation of the Beltz ASR facilities would not cause a substantial adverse change in the significance of a historical built environment resource. Therefore, these project components of the Proposed Project would have no impact on historical built environment resources.

<u>Water Transfers and Exchanges and Intertie Improvements</u>

**City/SVWD Intertie – New Pipeline and Pump Station.** The City/SVWD intertie would result in the placement of a new pipeline along Sims Road and La Madrona Road and construction of a new pump station. Based on the 2020 survey and records search conducted for the Proposed Project, this site does not contain historic built environment resources. This is consistent with the conclusions of a prior cultural resource study conducted of the same intertie facilities and location (URS 2013). Implementation of the City/SVWD intertie would not cause a substantial adverse change in the significance of a historical built environment resource. Therefore, this programmatic component of the Proposed Project would have no impact on historical built environment resources.

**City/SqCWD/CWD Intertie – Soquel Village and Park Avenue Pipelines and McGregor Pump Station Upgrade.** The City/SqCWD/CWD intertie would result in replacement of an existing pipeline in two segments, one in Soquel Village and one in Park Avenue, and upgrade of an existing pump station on McGregor Drive. Background research on these component site locations indicate that the only built environment properties that are likely 45 years old or older are the existing Soquel Village and Park Avenue pipelines, given that the pump station was recently constructed. Based on the historic context of the existing water management system the likelihood of the pipelines or any related water facility structure being found eligible for listing in the NRHP, CRHR or SCCHRI is low. Regardless, if these pipelines are determined to be historic resources, construction of the intertie could cause substantial adverse changes in the significance of such historical built environment resources. Therefore, this programmatic component of the Proposed Project could have a potentially significant impact on a historical built environment resource.

Implementation of MM-CUL-1b would avoid a substantial adverse change in the significance of a historical built environment resource by requiring: a records search and potential site survey on new ASR site(s) to confirm that there is no potential for historical built environmental resources to be present; preparation of a HRER for properties 45 years old or older that could be impacted during construction; and avoidance of any identified significant resources or implementation of design in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties such that the historical resource continues to convey its historical significance. Therefore, implementation of MM-CUL-1b would reduce potentially significant impacts of this programmatic component on historical built environment resources to less than significant.

**City/SqCWD/CWD Intertie – New Pump Stations.** The portion of the City/SqCWD/CWD intertie that would connect SqCWD and CWD would require the construction of two new pump stations, one on Valencia Road and one on Freedom Boulevard; however precise locations are not known at this time. Based on the 2020 survey and records search conducted for the Proposed Project, these two pump station sites do not contain historic built environment resources. Implementation of these new pump stations would not cause a substantial adverse change in the significance of a historical built environment resource. Therefore, this programmatic component of the Proposed Project would have no impact.

Felton Diversion Improvements

Based on the background research, a records search, and the 2020 site survey, no previously recorded or evaluated built environment resources were identified on the Felton Diversion Fish Passage Improvements site. No buildings or structures currently over the age of 45 years were identified that required evaluation under NRHP, CRHR, and Santa Cruz County significance criteria. As such, this property is not currently a historic property under Section 106 of the NHPA or historical resource under CEQA. However, this programmatic component could be under construction by 2027, at which time the facility would be over 50 years old. Based on the historic context of the existing water management system the likelihood of the diversion being found eligible for listing in the NRHP, CRHR, or SCCHRI is low. Regardless, if the Felton Diversion is determined to be a historical resource, construction of the diversion improvements could cause substantial adverse changes in the significance of such a historical built environment resource. Therefore, this programmatic component of the Proposed Project could have a potentially significant impact on a historical built environment resource.

Implementation of MM CUL-1a and 1b would avoid a substantial adverse change in the significance of a historical built environment resource by requiring: a records search and potential site survey on the Felton Diversion site when this component is pursued to confirm that there is no potential for historical built environmental resources to be present; preparation of a HRE for properties 45 years old or older that could be impacted during construction; and avoidance of any identified significant resources or implementation of design in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties such that the historical resource continues to convey its historical significance. Therefore, implementation of MM CUL-1a and 1b would reduce potentially significant impacts of this programmatic component on historical built environment resources to a less-than-significant level.

Tait Diversion and Coast Pump Station Improvements.

Based on the background research, records search, and the 2020 site survey, no previously recorded or evaluated built environment resources were identified on the Tait Diversion and Coast Pump Station site. The site was found to contain buildings and structures over the age of 45 years that required evaluation under NRHP, CRHR, and SCCHRI designation criteria. Neither facility was recommended as eligible for listing in the NRHP, the

CRHR, or the SCCHRI due to a lack of historical associations, architectural merit, and compromised integrity. As such, this property does not appear to be an historic property under Section 106 of the NHPA or a historical resource under CEQA. Implementation of the Tait Diversion and Coast Pump Station Improvements would not cause a substantial adverse change in the significance of a CEQA historical built environment resource. Therefore, this programmatic component of the Proposed Project would have no impact on historical built environment resources.

**Impact CUL-2: Archaeological Resources and Human Remains (Significance Standards A - C).** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, and/or disturb human remains. **(Less than Significant with Mitigation)**

**Water Rights Modifications**

The water rights modifications would not result in construction activities that could damage or otherwise alter unique archaeological resources or historical resources of an archaeological nature or disturb human remains. Given that, the water rights modifications would not disturb human remain or result in direct impacts to unique archaeological resources or historical resources of an archaeological nature, as defined in CEQA and the CEQA Guidelines Section 15064.5, and as a result would not cause a substantial adverse change in the significance of such resources. Therefore, this component of the Proposed Project would have no direct impacts on archaeological resources, historical resources of an archaeological nature, or human remains.

The following analysis evaluates the potential indirect impacts to unique archaeological resources, historical resources of an archaeological nature, or human remains as a result of the proposed water rights modifications, that once approved could result in the implementation of the project and programmatic infrastructure components of the Proposed Project.

**Infrastructure Components**

As indicated in Impact CUL-1 operation of the Proposed Project infrastructure components, involving the movement of water in pipelines and the pumping and extraction of water into and out of groundwater basins would not have the potential to impact unique archaeological resources or historical resources of an archaeological nature, or disturb human remains and therefore operation of these components is not further evaluated. However, construction of these infrastructure components would have the potential to impact unique archaeological resources or historical resources of an archaeological nature if such resources are present, or disturb human remains and therefore construction impacts are further evaluated below.

<u>Aquifer Storage and Recovery Facilities</u>

**New ASR Facilities.** The Proposed Project includes new ASR facilities that could be installed within the Santa Cruz Mid-County Groundwater Basin inside or outside the areas served by the City, and in the Santa Margarita Groundwater Basin outside the City's service area. Given that there are not identified locations for these facilities at this time, site-specific information about potential archaeological resources and human remains is not available. If such resources are present on these sites, Standard Construction Practices would be implemented, as described in Section 1.2.5. Standard Construction Practice No. 24 requires that standard inadvertent discovery clauses be included in all construction contracts to address the discovery of potential resources during construction. Standard Construction Practice No. 25 provides for the proper handling of human remains discovered inadvertently during construction. With the implementation of Standard Construction Practice No. 25, potential impacts related to construction of new ASR facilities on human remains would be less than significant. However, with the implementation of Standard Construction Practice No. 24, potential impacts related to construction of these programmatic components could still cause substantial adverse changes in the significance of such unique archaeological resources or historical resources of an archaeological nature, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 6.2, Analytical Methods. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Implementation of MM-CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature by requiring: a records search and site survey on these component sites to identify the potential for resources to be present on the site(s); inclusion of standard inadvertent discovery clauses in all construction contracts to address the discovery of potential resources during construction; determination by a qualified archaeologist whether the resource qualifies as an unique archaeological resource or a historical resource of an archaeological nature under CEQA Guidelines Section 15064.5 or NHPA Section 106; preservation in place, if feasible, if resources are determined to be significant; and appropriate data recovery and permanent curation of recovered materials if preservation in place is not feasible. Therefore, implementation of MM-CUL-2 would reduce the potentially significant impacts of these programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

**Beltz ASR Facilities.** Dudek conducted a CHRIS records search and a NAHC SLF search within 0.25 miles of Beltz 8, 9, 10 and 12 ASR facility sites as well as an intensive surface reconnaissance within and immediately adjacent to these components. No archaeological resources were identified within any of these component sites. There is low potential for encountering potentially significant unknown archaeological resources during construction. If such resources are present on these sites, Standard Construction Practices No. 24 and No. 25 would be implemented, as described in Section 6.2, Analytical Methods. With the implementation of Standard Construction Practice No. 25, potential impacts on human remains related to construction of Beltz ASR facilities would be less than significant. However, with the implementation of Standard Construction Practice No. 24, potential impacts related to construction of these project components could still cause substantial adverse changes in the significance of such unique archaeological resources or historical resources of an archaeological nature, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 6.2, Analytical Methds. Therefore, the impact of this project component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of the Beltz ASR sites, MM-CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM-CUL-2 would reduce the potentially significant impacts of this project component on unique archaeological resources or archaeological resources of a historical nature to a less-than-significant level.

Water Transfers and Exchanges and Intertie Improvements

**City/SVWD Intertie – New Pipeline and Pump Station.** Dudek conducted a CHRIS records search and a NAHC SLF search within 0.25 miles of this component site as well as an intensive surface reconnaissance within and immediately adjacent to this site. No archaeological resources were identified within this component site. This component was also evaluated for the Scotts Valley Multi-Agency Regional Intertie Project in 2010 (Section 2.1.1); there were no impacts to significant archaeological resources found relative to this component (URS 2013). There is low potential for encountering potentially significant unknown archaeological resources during construction. If such resources are present on this site, Standard Construction Practices No. 24 and No. 25 would be implemented, as described in Section 6.2, Analytical Methods. With the implementation of Standard Construction Practice No. 25, potential impacts on human remains related to construction of the City/SVWD Intertie would be less than significant. However, with the implementation of Standard Construction Practice No. 24, potential impacts related to construction of this programmatic component could still cause substantial adverse changes in the significance of such historical or unique archaeological resources as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 6.2. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of this component site, MM-CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM-CUL-2 would reduce the potentially significant impacts of this programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

**City/SqCWD/CWD Intertie - Soquel Village and Park Avenue Pipelines and McGregor Pump Station Upgrade.** The CHRIS records search identified two recorded archaeological resources: CA-SCR-191, is located within 150 feet of the Soquel Village pipeline; and CA-SCR-214 is located within ten feet of the Park Avenue pipeline. Documentary research indicates the sites were subjected to subsurface testing and found to be of very low density and integrity (CA-SCR-191) or found not to constitute an actual archaeological deposit (Section 2.1.1). There is low potential for encountering potentially significant unknown archaeological resources during future construction. If such resources are present on these sites, Standard Construction Practices No. 24 and No. 25 would be implemented, as described above for new ASR facilities. With the implementation of Standard Construction Practice No. 25, potential impacts on human remains related to construction of the Soquel Village and Park Avenue pipelines and McGregor pump station upgrade would be less than significant. However, with the implementation of Standard Construction Practice No. 24, potential impacts related to construction of this programmatic component could still cause substantial adverse changes in the significance of such historic or unique archaeological resources, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 6.2, Analytical Methods. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of this programmatic component site, MM-CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM-CUL-2 would reduce the potentially significant impacts of this programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

**City/SQCWD/CWD Intertie – New Pump Stations.** As indicated in Impact CULT-1, precise locations are not known at this time for the two new pump stations, one on Valencia Road and one on Freedom Boulevard. Dudek conducted a CHRIS records search and a NAHC SLF search within 0.25 miles of these components as well as a general surface reconnaissance in the vicinity of the components. No archaeological resources were identified within these sites, based on this review. There is low potential for encountering potentially significant unknown archaeological resources during future construction. If such resources are present on these sites, Standard Construction Practices No. 24 and No. 25 would be implemented, as described above for new ASR facilities. With the implementation of Standard Construction Practice No. 25, potential impacts on human remains related to construction of these pump stations would be less than significant. However, with the implementation of Standard Construction Practice No. 24, potential impacts related to construction of this programmatic component could still cause substantial adverse changes in the significance of such historic or unique archaeological resources as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 6.2, Analytical Methods. Therefore, the impact of this programmatic component of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of this programmatic component site, MM-CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM-CUL-2 would reduce the potentially significant impacts of this programmatic component on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

<u>Surface Water Diversion Improvements</u>

Dudek conducted a CHRIS records search and a NAHC SLF search within 0.25 miles of Tait Diversion and Coast Pump Station improvements site and the Felton Diversion fish passage improvements site as well as an intensive surface reconnaissance within and immediately adjacent to these component sites. No archaeological resources or evidence of human remains were identified within these two component sites. There is low potential at both sites for encountering unknown archaeological resources during construction. If such resources are present on these sites, Standard Construction Practices No. 24 and No. 25 would be implemented, as described above for new ASR facilities. With the implementation of Standard Construction Practice No. 25, potential impacts on human remains related to construction of these diversion improvements would be less than significant. However, with the implementation of Standard Construction Practice No. 24, potential impacts related to construction of these programmatic components could still cause substantial adverse changes in the significance of such historical or unique archaeological resources as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 6.2, Analytical Methods. Therefore, the impact of these programmatic components of the Proposed Project on unique archaeological resources or historical resources of an archaeological nature would be potentially significant.

Notwithstanding the low sensitivity of these component sites, MM-CUL-2 would avoid a substantial adverse change in the significance of unique archaeological resources or historical resources of an archaeological nature, as described above for new ASR facilities. Therefore, implementation of MM-CUL-2 would reduce the potentially significant impacts of these programmatic components on unique archaeological resources or historical resources of an archaeological nature to a less-than-significant level.

**Impact CUL-3: Tribal Cultural Resources (Significance Standard D).** Construction of Proposed Project infrastructure components could cause a substantial adverse change in the significance of tribal cultural resource. **(Less than Significant with Mitigation)**

A NAHC SLF search did not identify any known Tribal Cultural Resources (TCR) within any of the 11 components of the study area and a 0.25-mile buffer from the study area. Dudek notified tribes traditionally associated with the study area about the Proposed Project and requested information regarding TCRs on April 7, 2020. The outreach effort has not resulted in the identification of a TCR within or near the study area. No known geographically defined TCRs have been identified. On April 7, 2020, Valentin Lopez, Chair of the Amah Mutsun Tribal Band, contacted Dudek. Regarding the Proposed Project, Mr. Lopez requested that a Native American monitor from the Amah Mutsun Tribal Band be hired for all ground-disturbance work within 400 feet of known cultural resource sites. As documented in Section 2.1.1 above, there are two locations where recorded prehistoric sites are within 400 feet of a component of the study area. In both instances, the subject prehistoric sites have been the subject of subsurface testing with findings that suggest either that the resources in question are of very low integrity and or of such low density that their designation as actual prehistoric sites is questionable.

The project and programmatic components would not impact known archaeological sites or TCRs. Nevertheless, in the event that unknown archaeological sites or TCRs are uncovered during the course of construction Standard Construction Practices No. 24 and No. 25 would be implemented, as described above in Impact CUL-2. With the implementation of Standard Construction Practice No. 25, potential impacts on human remains would be less than significant. However, with the implementation of Standard Construction Practice No. 24, the Proposed Project could still cause substantial adverse changes in the significance of a historical or unique archaeological resource, as the practice stops short of specifying how to appropriately treat such a significant resource, as described in Section 6.2, Analytical Methods. Therefore, the impact of the Proposed Project on archaeological sites or tribal cultural resources would be potentially significant.

MM-CUL-2 would avoid substantial adverse changes in the significance of archaeological sites or TCRs, as described above for new ASR facilities in Impact CUL-2. Therefore, implementation of MM-CUL-2 would reduce the potentially significant impacts of the Proposed Project on archaeological sites or tribal cultural resources to a less-than-significant level.

## 6.4 Mitigation Measures

Implementation of the following mitigation measures would reduce potentially significant cultural and tribal cultural resources impacts of the Proposed Project related to infrastructure construction, as described in the sections above, to a less-than-significant level.

**MM-CUL-1** **Historic Era Built Environment Resources.** Potentially significant impacts to historic built environmental resources on the infrastructure component sites shall be addressed through the following measures:

a. **Identify Potential Historic Built Environment Resources (Applies to New ASR Facilities and the Felton Diversion).** When new or upgraded facilities move into project level design and those developments are being pursued by the City, a qualified cultural resource specialist shall review the project site and conduct a CHRIS records search. If there are no previously recorded resources or historic era buildings or structures located on the site, no further action is warranted. If these project site review efforts indicate a potential for CEQA historical resources, all buildings and structures within the component site that are 45 years or older, shall be identified and measure b shall be implemented.

b. **Evaluate Potential Built Environment Resources (Applies to New ASR Facilities, City/SqCWD/CWD Intertie – Soquel Village and Park Avenue Pipelines, and Felton Diversion).** Should potential CEQA historical resources be identified within the above programmatic infrastructure component sites, prior to project implementation, the City or other lead agency overseeing the Proposed Project shall retain a qualified architectural historian, meeting the Secretary of the Interior's Professional Qualification Standards (36 CFR, Part 61), to record such potential resources based on professional standards, to formally assess their significance under CEQA Guidelines Section 15064.5. A Historic Resources Evaluation Report (HRER) shall be prepared by the architectural historian to evaluate properties over 45 years of age under all applicable significance criteria. In consideration of the historic context for the existing water management systems in the region there is a low-likelihood that water management structures that postdate the late 1800s or early 1900s (pioneering water system era) will be found historically significant. Therefore, for existing infrastructure component sites it is likely that the HRER will find that no properties meet the significance criteria and therefore, no CEQA historical resources are likely to be present. No further work shall be required for historic era-built environment properties, buildings, or structures 45 years old or older at these sites that are not found to meet the CEQA historical significance criteria as historical resources. If a property is found to be eligible for listing under the applicable significance criteria and therefore considered a CEQA historical resource the resource shall be avoided or preserved in place. If avoidance or preservation in place is not feasible, and the historical resource will be modified through design such that it may not be able to convey its historic significance, the City will retain a qualified architectural historian to prepare a subsequent technical report. This required report will assess the proposed project design plans and/or schematics in conjunction with the subject CEQA historical resource and determine whether the Proposed Project conforms with the Secretary of the Interior's Standards for the Treatment of Historic Properties, specifically, the Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Structures). The City shall modify the Proposed Project, as needed, to ensure that the Secretary of the Interior's Standards are met such that the historical resource continues to convey its historical significance.

MM-CUL-2 **Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources.** Potentially significant impacts to unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources on the infrastructure component sites shall be addressed through the following measures:

a. **Identify Potential Historic or Unique Archaeological Resources (Applies to New ASR Facilities and Other Components where Five Years Have Elapsed).** When new ASR facilities sites are identified and those components are being pursued by the City, a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, shall conduct a CHRIS records search, a NAHC Sacred Lands File search and perform an intensive surface reconnaissance within a specifically defined ADI (Area of Direct Impact). Based on the above, all archaeological sites within or near the component site or area of potential effect shall be identified. The sensitivity of the site for discovering unknown resources, shall also be identified. The qualified archaeologist will prepare a technical report with the results of the above. The qualified archaeologist shall attempt to ascertain whether the archaeological sites qualify as unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources. If known or identified resources of these kinds are present on the site, measure c shall be implemented.

   This measure shall also be implemented for any other project or programmatic components that are implemented more than five years after the CHRIS records search and NAHC SLF search were conducted for this report.

b. **Standard Sensitivity Training and Inadvertent Discovery Clauses (Applies to all Components).** The City or other lead agency shall include a standard clause in every construction contract for the Proposed Project, which requires cultural resource sensitivity training for workers prior to conducting earth disturbance in the vicinity of a documented cultural-resource-sensitive area, should one be identified in the future. Prior to site mobilization or construction activities on the project site, a qualified archaeologist with training and experience in California prehistory and historical period archaeology shall conduct the cultural resources awareness training for all project construction personnel. The training shall address the identification of buried cultural deposits, including Native American and historical period archaeological deposits and potential tribal cultural resources, and cover identification of typical prehistoric archaeological site components including midden soil, lithic debris, and dietary remains as well as typical historical period remains such as glass and ceramics. The training must also explain procedures for stopping work if suspected resources are encountered. Any personnel joining the work crew subsequent to the training shall also receive the same training before beginning work.

   Consistent with Standard Construction Practice No. 24, standard inadvertent discovery clauses shall also be included in every construction contract for the Proposed Project by the City or other lead agency, which requires that in the event that an archaeological resource is discovered during construction (whether or not an archaeologist is present), all soil disturbing work within 100 feet of the find shall cease until a qualified archaeologist can evaluate the find and make a recommendation for how to proceed, as specified in measure c.

c. **Evaluate Potential Unique Archaeological Resources, Historical Resources of Archaeological Nature, and Subsurface Tribal Cultural Resources (Applies to all Components).** For an archaeological resource that is discovered during initial site review (measure a) or during construction (measure b), the City or other lead agency shall:

   - Retain a qualified archaeologist to determine whether the resource has potential to qualify as either a unique archaeological resource, a historical resource of an archaeological nature, or a subsurface tribal cultural resource under Public Resources Code Section 21074, CEQA Guidelines Section 15064.5 or Section 106 of the National Historic Preservation Act.
   - If the resource has potential to be a unique archaeological resource, a historical resource of an archaeological nature, or a subsurface tribal cultural resource, the qualified archaeologist, in consultation with the lead agency, shall prepare a research design and archaeological evaluation plan to assess whether the resource should be considered significant under CEQA criteria.
   - If the resource is determined significant, the lead agency shall provide for preservation in place, if feasible. If preservation in place is not feasible, the qualified archaeologist, in consultation with the lead agency, will prepare a data recovery plan for retrieving data relevant to the site's significance. The data recovery plan shall be implemented prior to, or during site development (with a 100-foot buffer around the resource). The archaeologist shall also perform appropriate technical analyses, prepare a full written report and file it with the Northwest Information Center, and provide for the permanent curation of recovered materials. The written report will provide new recommendations, which could include, but would not be limited to, archaeological and Native American monitoring for the remaining duration of project construction.

# 7 Findings and Management Recommendations

As a result of Dudek's research, field survey, and property significance evaluation, the following section presents a summary of eligibility conclusions for the historic property in the project area as well as an analysis of the impacts that the Proposed Project would have on the historic property in consideration of the findings.

## 7.1 Summary of Findings

### 7.1.1 Archaeological Findings

The results of the assessment suggest there are no historic properties of an archaeological nature within the entire study area. The results also suggest that the potential for encountering unknown archaeological resources during the planned construction is low in all 11 components of the study area. Specifically, the records search did not identify any known archaeological resources within the study area and the surface reconnaissance was negative for evidence of previously unknown archaeological resources. Findings and recommendations for archaeological resources are summarized in Table 10.

Native American contact Valentin Lopez requested monitoring within 400 feet of know prehistoric resources. As documented in Section 2.1.1 above, there are two locations where recorded prehistoric sites are within 400 feet of a component of the study area. In both instances, the subject prehistoric sites have been the subject of subsurface testing with findings that suggest either that the resources in question are of very low integrity and or of such low density that their designation as actual prehistoric sites is questionable.

**Table 10. Findings and Recommendations by Component for Archaeological Resources**

| Components of the Study Area and APEs | NHPA Section 106 Findings | CEQA Findings |
|---|---|---|
| Beltz ASR Facilities | No Historic Properties Affected | No Significant Impact with Mitigation |
| Felton Diversion Site | No Historic Properties Affected | No Significant Impact with Mitigation |
| Tait Diversion and Coast Pump Station Site | No Historic Properties Affected | No Significant Impact with Mitigation |
| ***Components of the Study Area Not in the APEs*** | ***CEQA Findings*** | |
| New ASR Facilities | No Significant Impact with Mitigation | |
| City/SVWD intertie | No Significant Impact with Mitigation | |
| City/SqCWD/CWD intertie – Soquel Village Pipeline | No Significant Impact with Mitigation | |
| City/SqCWD/CWD intertie – Park Avenue Pipeline and McGregor Pump Station Upgrade | No Significant Impact with Mitigation | |
| City/SqCWD/CWD intertie – Freedom Boulevard Pump Station | No Significant Impact with Mitigation | |
| City/SqCWD/CWD intertie – Valencia Road Pump Station | No Significant Impact with Mitigation | |

### 7.1.2 Archaeological Management Recommendations

As indicated in Section 1.2.5, the Proposed Project includes the following Standard Construction Practices:

24. In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the Proposed Project, immediately stop all construction work occurring within 100 feet of the find until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find, and whether the archaeological resources qualify as unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources. The archaeologist will determine whether additional study is warranted. Should it be required, the archaeologist may install temporary flagging around a resource to avoid any disturbances from construction equipment. Depending upon the significance of the find under CEQA (14 CCR 15064.5[f]; California Public Resources Code, Section 21082), the archaeologist may record the find to appropriate standards (thereby addressing any data potential) and allow work to continue. If the archaeologist observes the discovery to be potentially significant under CEQA, preservation in place or additional treatment may be required.
25. In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, immediately notify the lead agency staff and the County Coroner of the discovery. The coroner would provide a determination within 48 hours of notification. No further excavation or disturbance of the identified material, or any area reasonably suspected to overlie additional remains, can occur until a determination has been made. If the County Coroner determines that the remains are, or are believed to be, Native American, the coroner would notify the Native American Heritage Commission within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the Most Likely Descendant from the deceased Native American. Within 48 hours of this notification, the Most Likely Descendant would recommend to the lead agency her/his preferred treatment of the remains and associated grave goods.

### 7.1.3 Built Environment Findings

The Coast Pump Station and Tait Diversion combination facility and the Beltz 8 ASR site were evaluated for historical significance by Dudek. These do not appear eligible for listing in the NRHP, the CRHR, the City of Santa Cruz Historic Building Survey or the Santa Cruz County HRI due to a lack of historical associations, architectural merit, and compromised integrity. As such, these properties do not appear to be historic properties under Section 106 of the NHPA or historical resources under CEQA and they have been assigned a California Historical Resource Status Code of 6Z (found ineligible for the NRHP, CRHR, or local designation through survey evaluation). Findings and recommendations for Built Environment resources are summarized in Table 11. No management recommendations are required for these resources.

## Table 11. Findings and Recommendations for Built Environment Resources

| Study Area Components | CEQA Environmental Review Level | Section 106 Level Analysis/ APE delineated | New Facility or Upgrade to Existing Facility | Age of Built Environment Structures | Figure Number (Appendix A) | Built Environment Evaluation as part of this report and eligibility finding | CEQA Findings | NHPA Section 106 Findings (if applicable) |
|---|---|---|---|---|---|---|---|---|
| ***Water Rights Modifications*** | | | | | | | | |
| No impacts or adverse effects to cultural resources | | | | | | | | |
| ***Water Supply Augmentation Components*** | | | | | | | | |
| ASR Facilities | | | | | | | | |
| New ASR Facilities | Programmatic | No | New | Exact Sites Unknown at this time | NA | No | Less than significant with mitigation | N/A |
| Beltz 8 ASR Facility | Project | Yes | Upgrade | 1971 facility modification 1985, 1998 | 4a | Yes/Not Eligible | No Impact | No Historic Properties Affected |
| Beltz 9 ASR Facility | Project | Yes | Upgrade | 1998 | 4b | No/Not of Age | No Impact | No Historic Properties Affected |
| Beltz 10 ASR Facility | Project | Yes | Upgrade | 2004 | 4c | No/Not of Age | No Impact | No Historic Properties Affected |
| Beltz 12 ASR Facility | Project | Yes | Upgrade | 2012 | 4d | No/Not of Age | No Impact | No Historic Properties Affected |
| City/SVWD Intertie – New Pipeline and Pump Station | Programmatic | No | New | Proposed all new components no existing structures | 4e | No/Nothing found – no constraints | No Impact | N/A |
| City/SqCWD/CWD Intertie - | Programmatic | No | Upgrade | Existing pipeline, likely over 45 years old | 4f | No/Need Project Level Assessment | Less than significant with mitigation | N/A |

## Table 11. Findings and Recommendations for Built Environment Resources

| Study Area Components | CEQA Environmental Review Level | Section 106 Level Analysis/ APE delineated | New Facility or Upgrade to Existing Facility | Age of Built Environment Structures | Figure Number (Appendix A) | Built Environment Evaluation as part of this report and eligibility finding | CEQA Findings | NHPA Section 106 Findings (if applicable) |
|---|---|---|---|---|---|---|---|---|
| Soquel Village Pipeline | | | | | | | | |
| City/SqCWD/CWD Intertie - Park Avenue Pipeline and Upgraded Pump Station | Programmatic | No | Upgrade | Existing pipeline, likely over 45 years old | 4f | No/Need Project Level Assessment | Less than significant with mitigation | N/A |
| City/SqCWD/CWD Intertie - Freedom Boulevard Pump Station | Programmatic | No | New | Proposed all new components no existing structures | 4g | No/Nothing found – no constraints | No Impact | N/A |
| City/SqCWD/CWD Intertie - Valencia Road Pump Station | Programmatic | No | New | Proposed all new components no existing structures | 4g | No/Nothing found – no constraints | No Impact | N/A |
| *Surface Water Diversion Improvement Components* | | | | | | | | |
| Felton Diversion Improvements | Programmatic | Yes | Upgrade | 1976 – concrete bladder dam | 4h | No/Not of Age | No Impact | No Historic Properties Affected |
| Tait Diversion and Coast Pump Station Improvements | Programmatic | Yes | Upgrade | c.1934, altered 1961 and 1984 (Tait Diversion) 1929 (Coast Pump Station) | 4i | Yes/Not Eligible | No Impact | No Historic Properties Affected |

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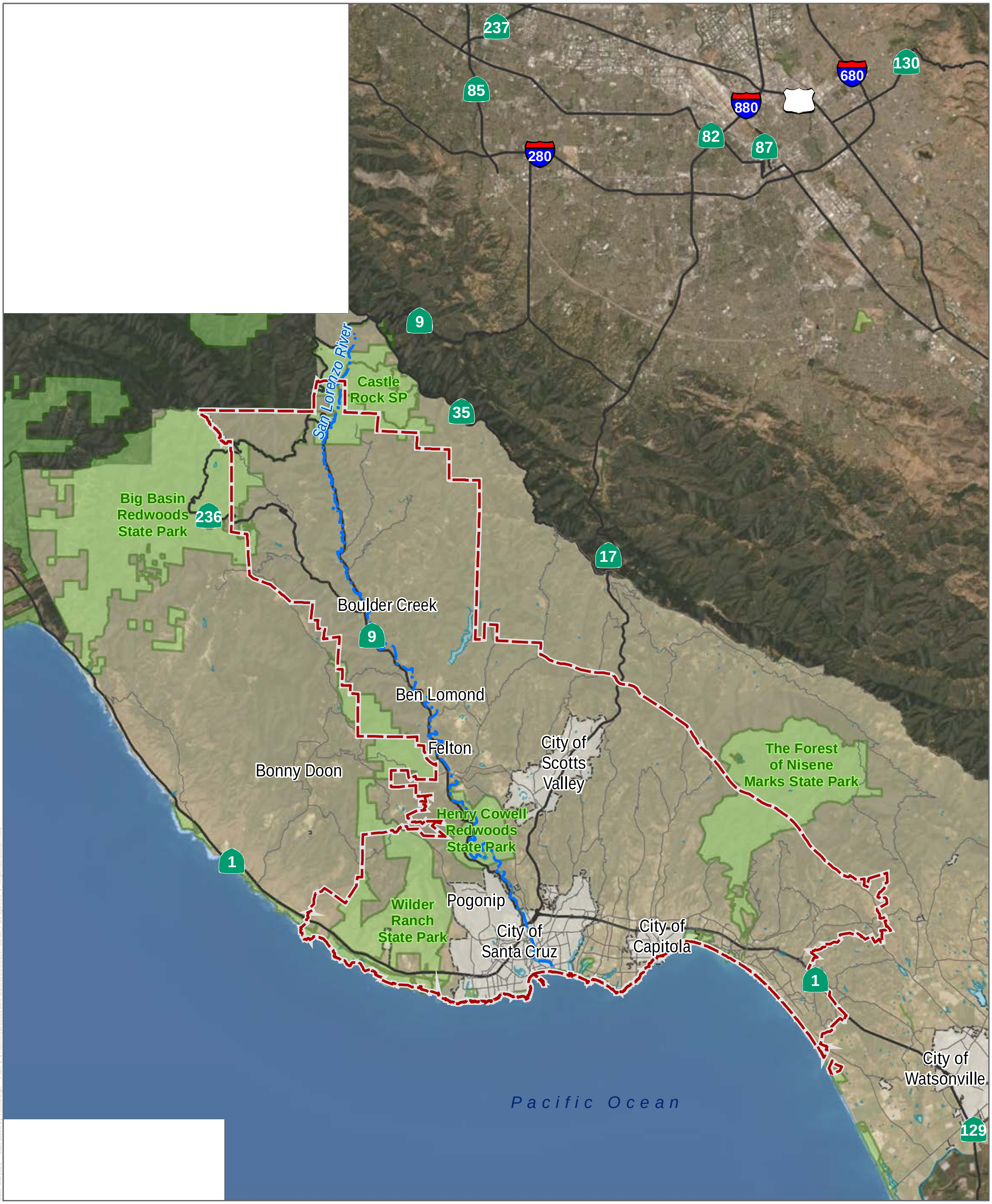
# Appendix A

## Project Location, Project Description, and Project APE Maps




SOURCE: ESRI 2020, City of Santa Cruz 2020

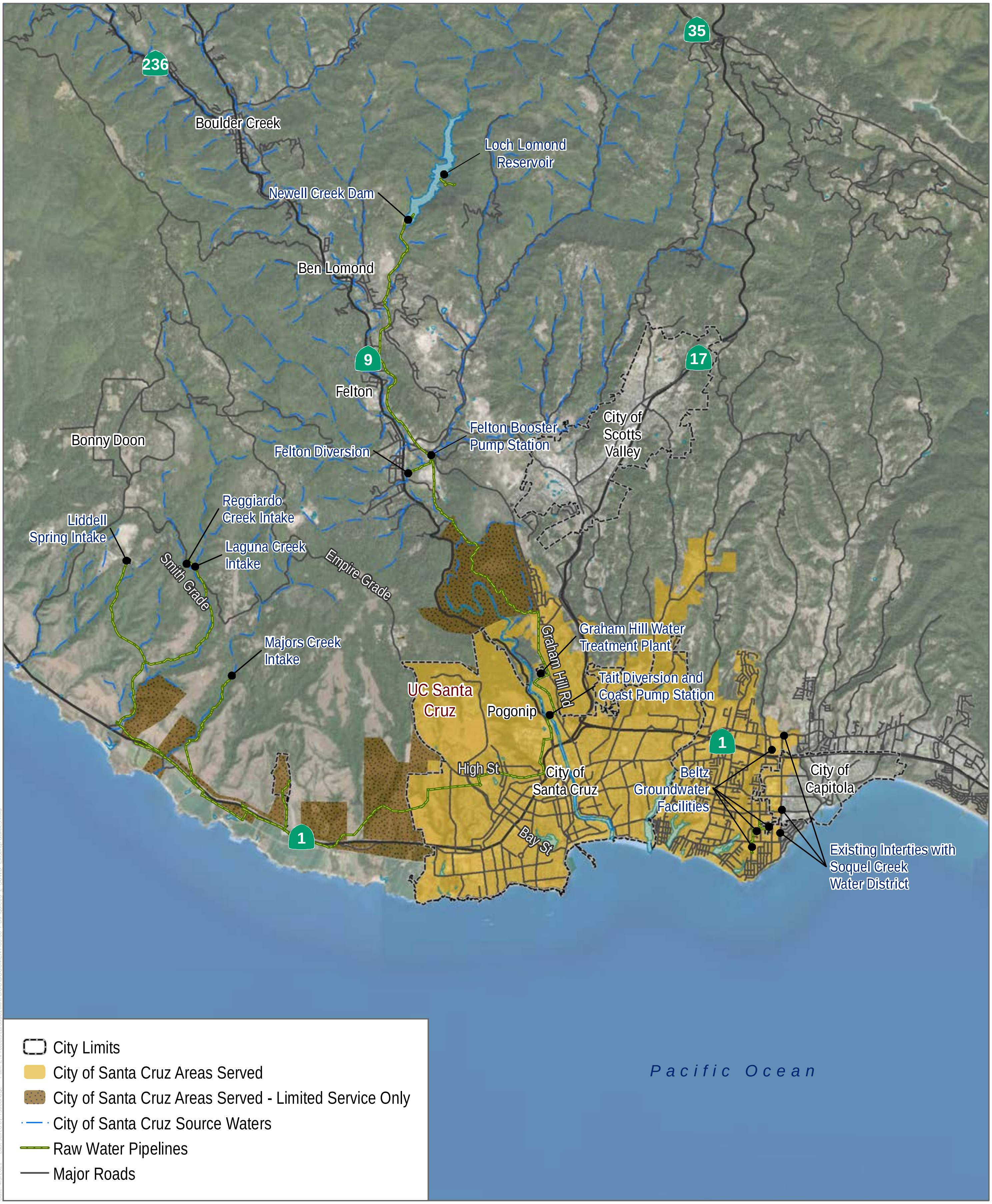
FIGURE 1

## Project Location

Santa Cruz Water Rights Project

DUDEK

0 10,500 21,000 Feet




SOURCE: ESRI 2020, City of Santa Cruz 2020

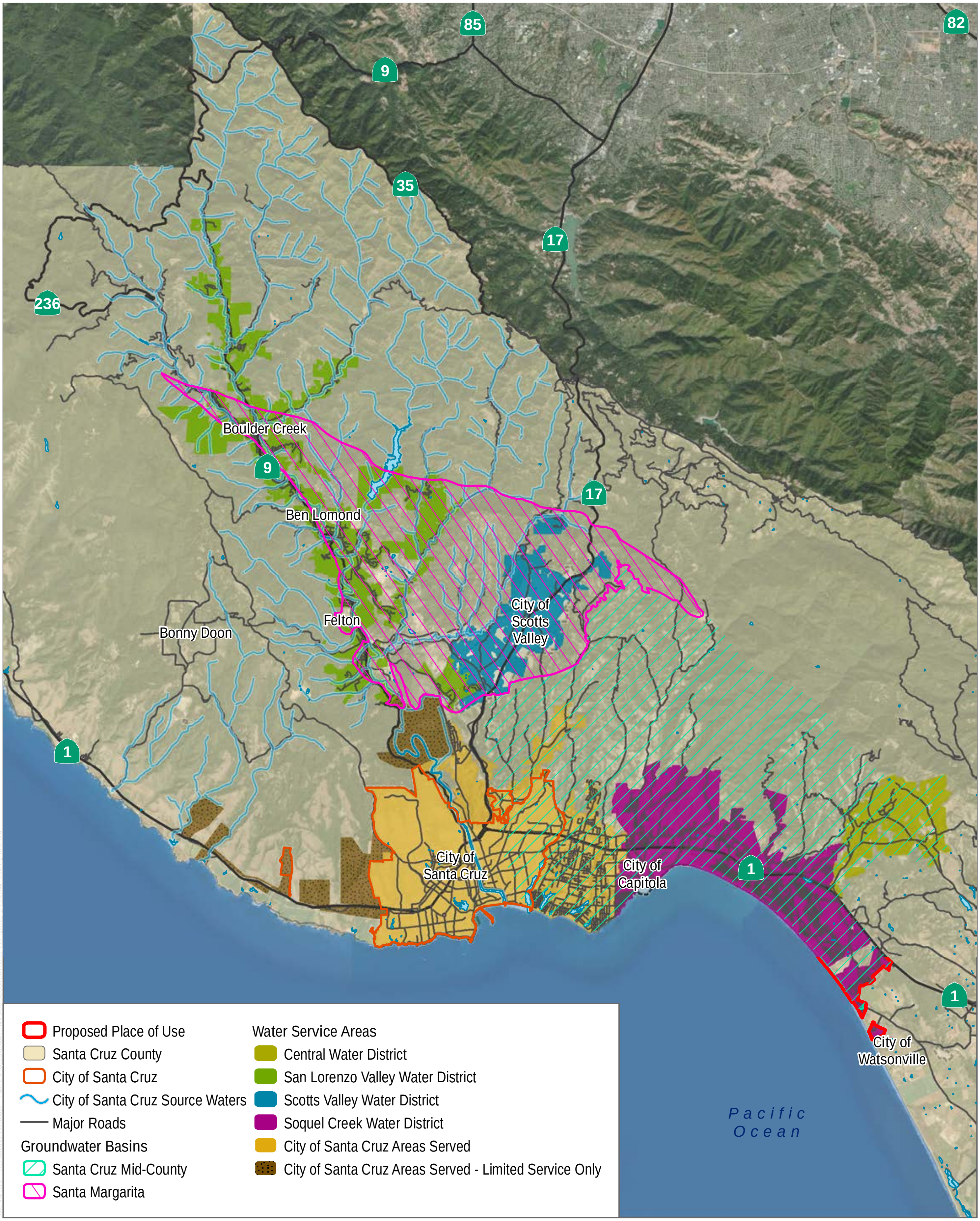
DUDEK

0 1 2 Miles

FIGURE 2

Existing City of Santa Cruz Water System Facilities

Santa Cruz Water Rights Project




SOURCE: ESRI 2020, County of Santa Cruz 2020, City of Santa Cruz 2020

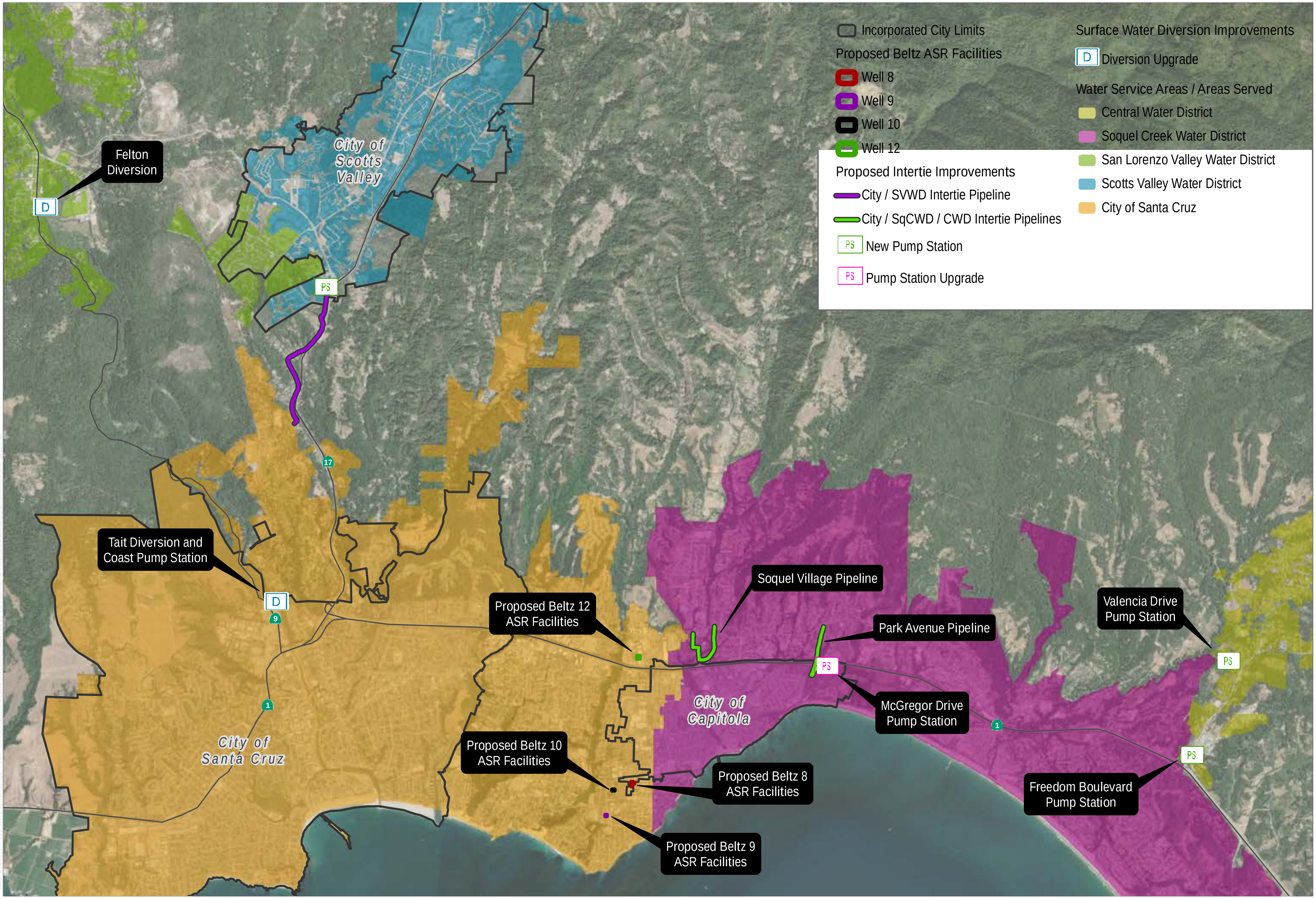
DUDEK

0 1.5 3 Miles

FIGURE 3

Potential Regional Partnering Water Districts

Santa Cruz Water Rights Project




SOURCE: Bing Maps Accessed 2020, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

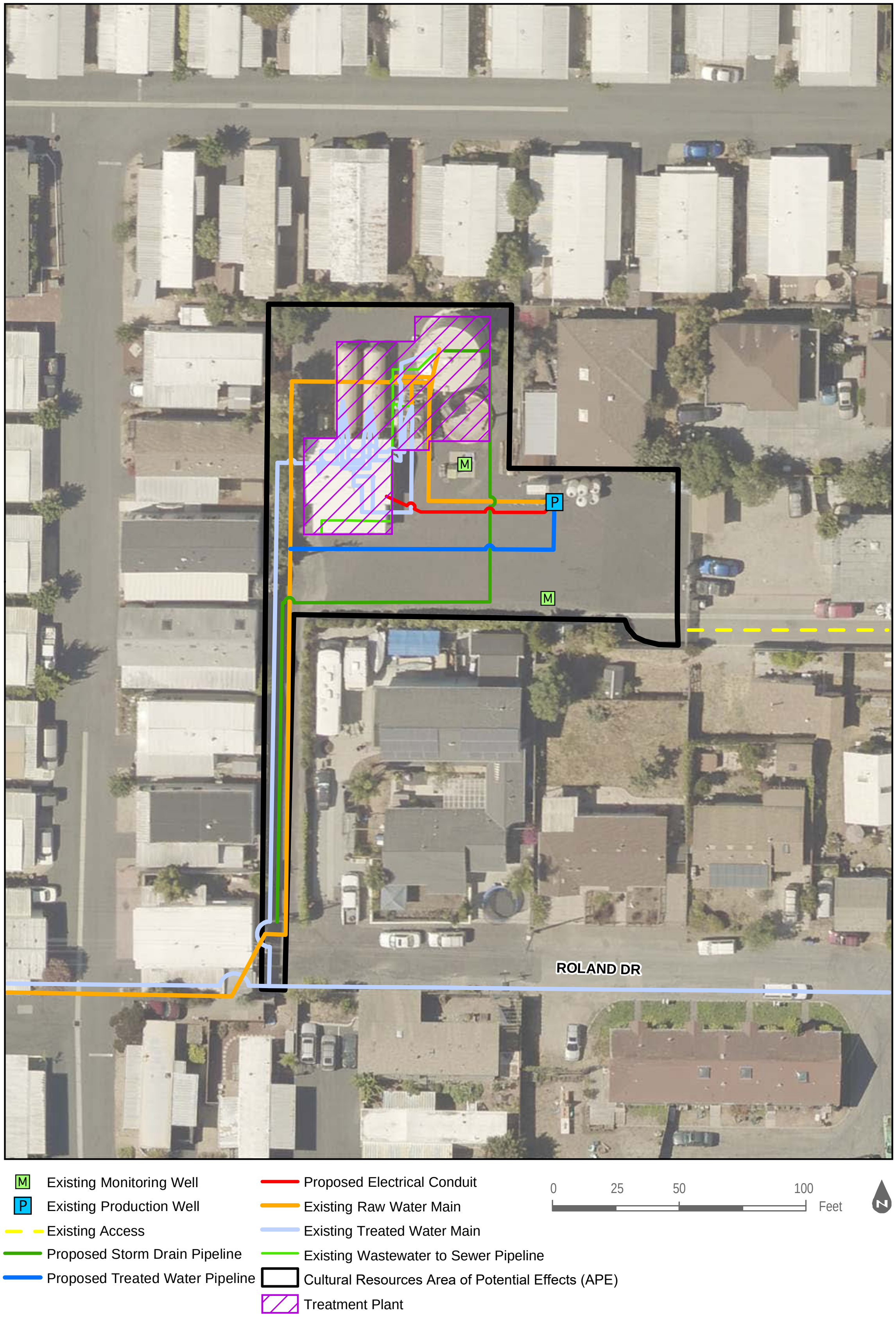
DUDEK

0 3,250 6,500 Feet

FIGURE 4

Proposed New and Upgraded Infrastructure Components

Santa Cruz Water Rights Project



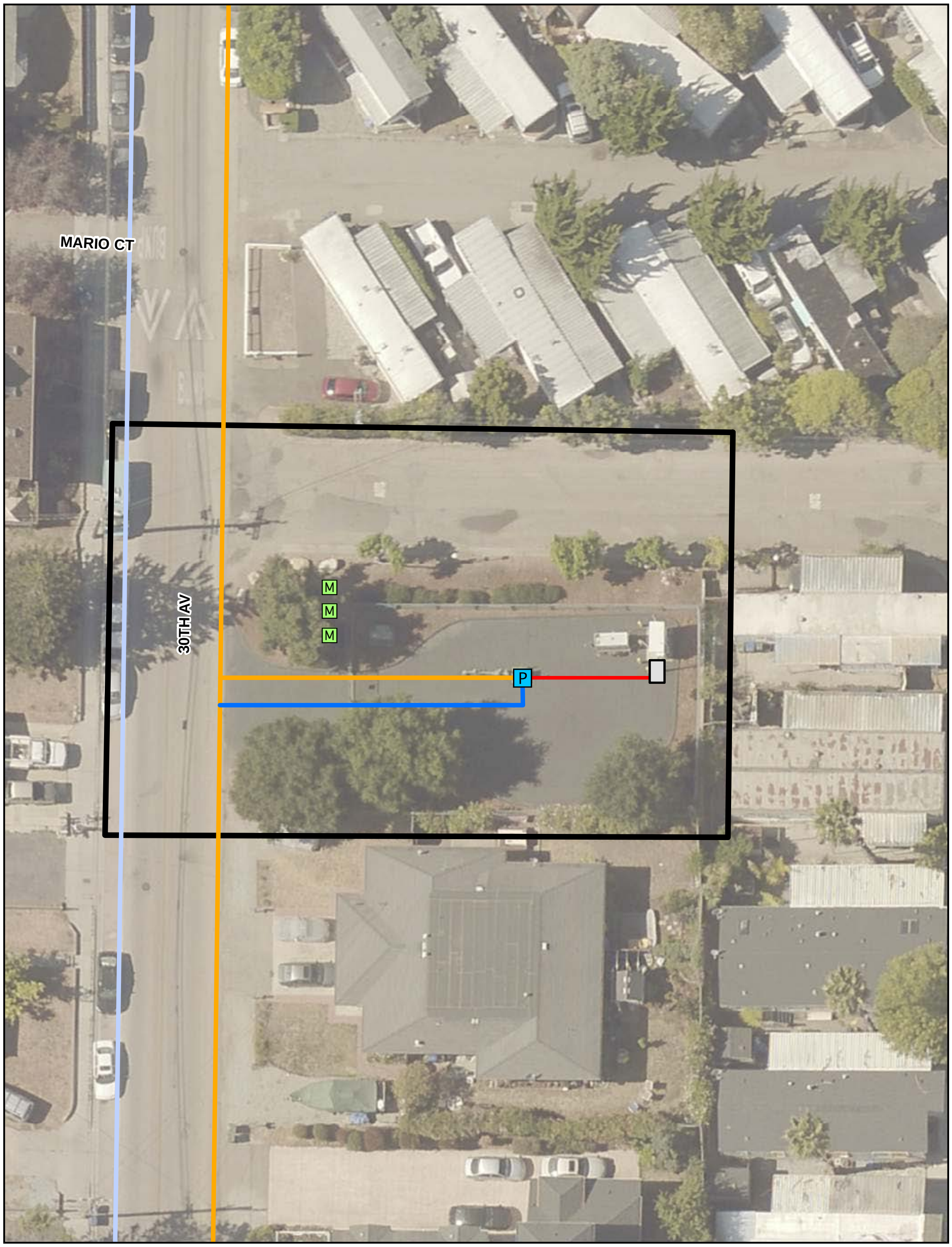

SOURCE: City of Santa Cruz 2021

FIGURE 4A

Proposed Beltz 8 ASR Facilities - Area of Potential Effects Map

Santa Cruz Water Rights Project

DUDEK




Proposed Monitoring Well
Existing Production Well
Proposed Electrical Conduit
Proposed Treated Water Pipeline
Existing Raw Water Main
Existing Treated Water Main
Proposed Operation Panel
Cultural Resources Area of Potential Effects (APE)

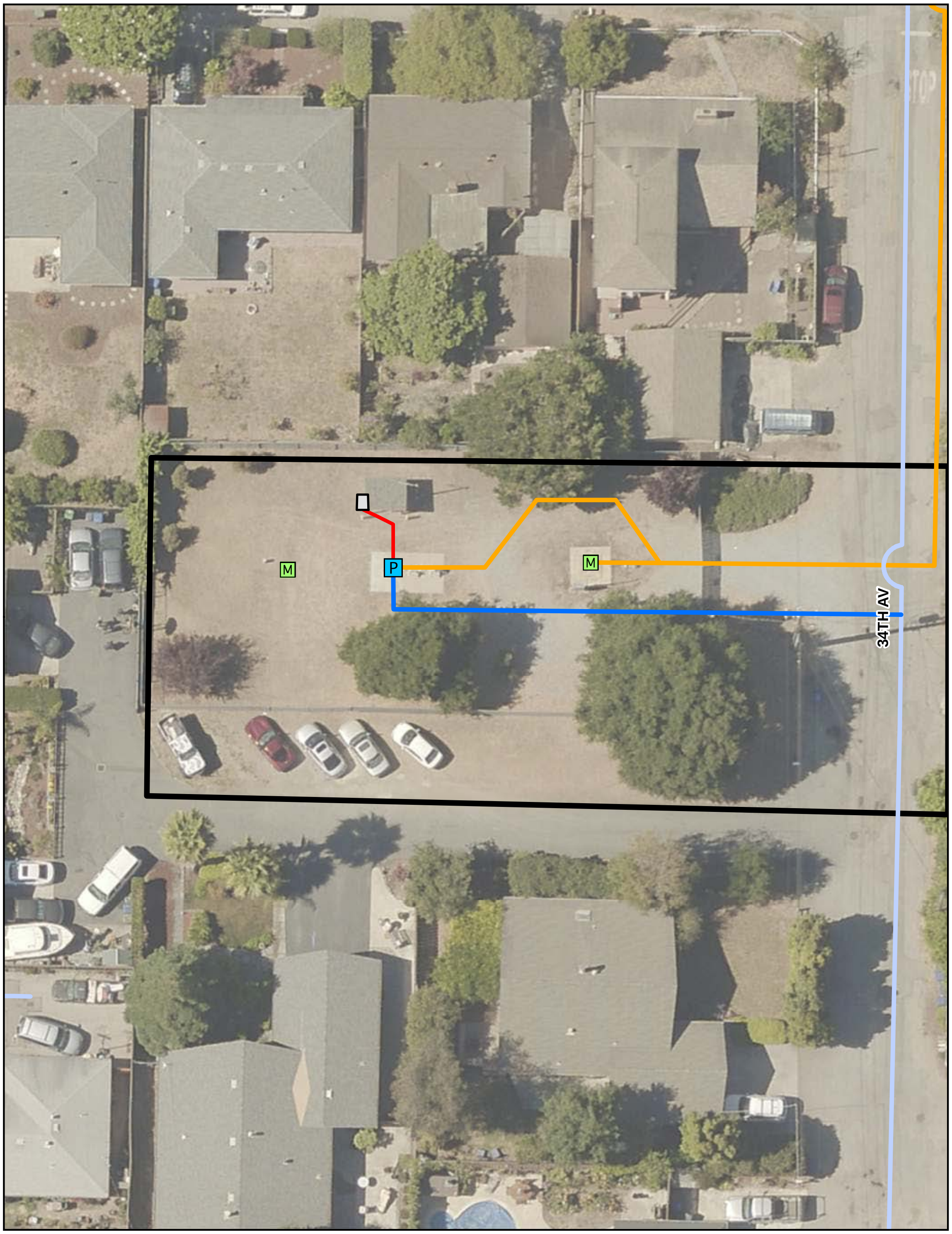
SOURCE: City of Santa Cruz 2019

FIGURE 4B

Proposed Beltz 9 ASR Facilities - Area of Potential Effects Map

Santa Cruz Water Rights Project

DUDEK




M Existing Monitoring Well
P Existing Production Well
Proposed Electrical Conduit
Proposed Treated Water Pipeline
Existing Raw Water Main
Existing Treated Water Main
Proposed Operation Panel
Cultural Resources Area of Potential Effects (APE)

0 15 30 60 Feet

N

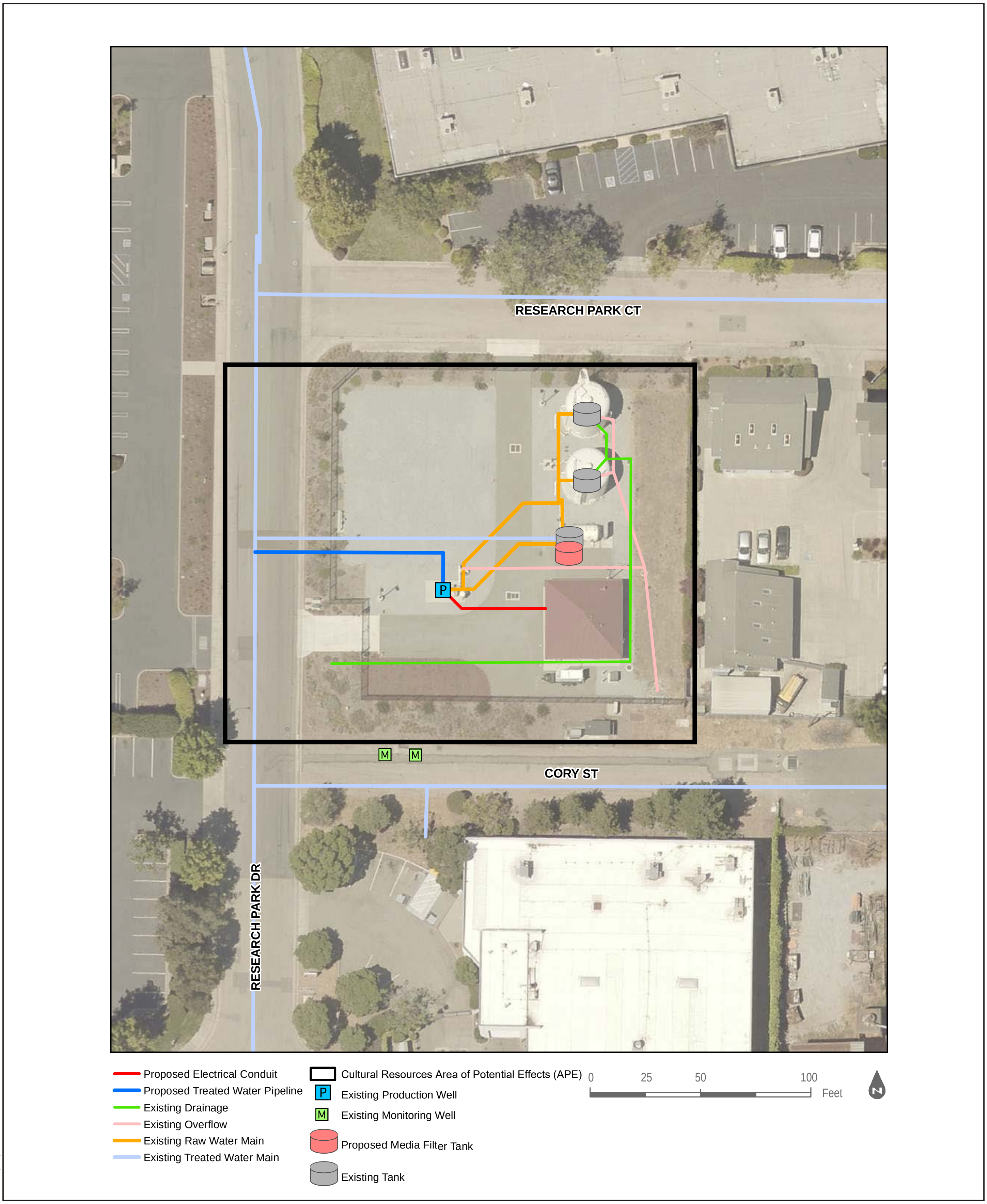
SOURCE: City of Santa Cruz 2021

FIGURE 4C

Proposed Beltz 10 ASR Facilities - Area of Potential Effects Map

Santa Cruz Water Rights Project

DUDEK



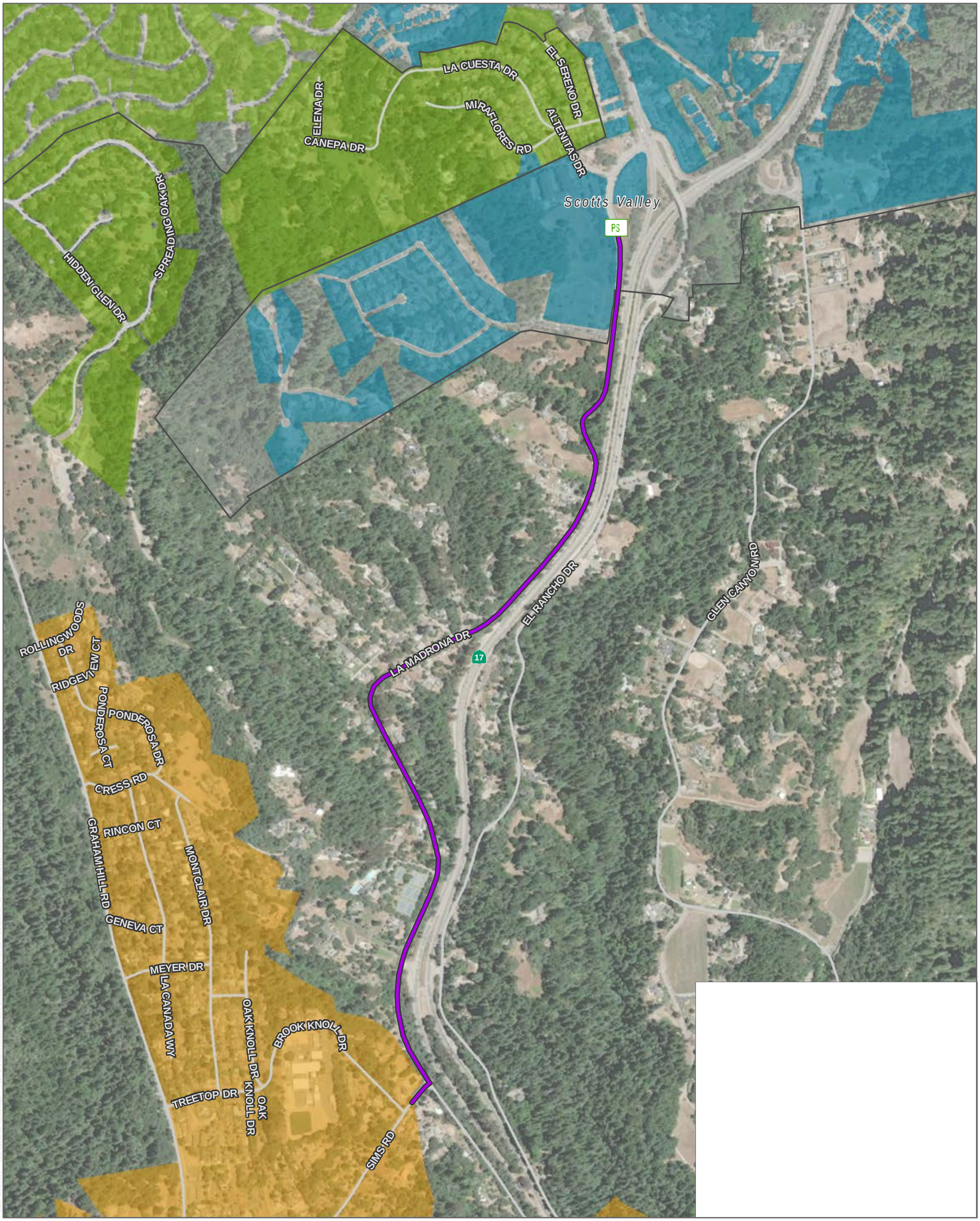

SOURCE: City of Santa Cruz 2021

FIGURE 4D

## Proposed Beltz 12 ASR Facilities - Area of Potential Effects Map

Santa Cruz Water Rights Project

DUDEK




SOURCE: Bing Maps Accessed 2019, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

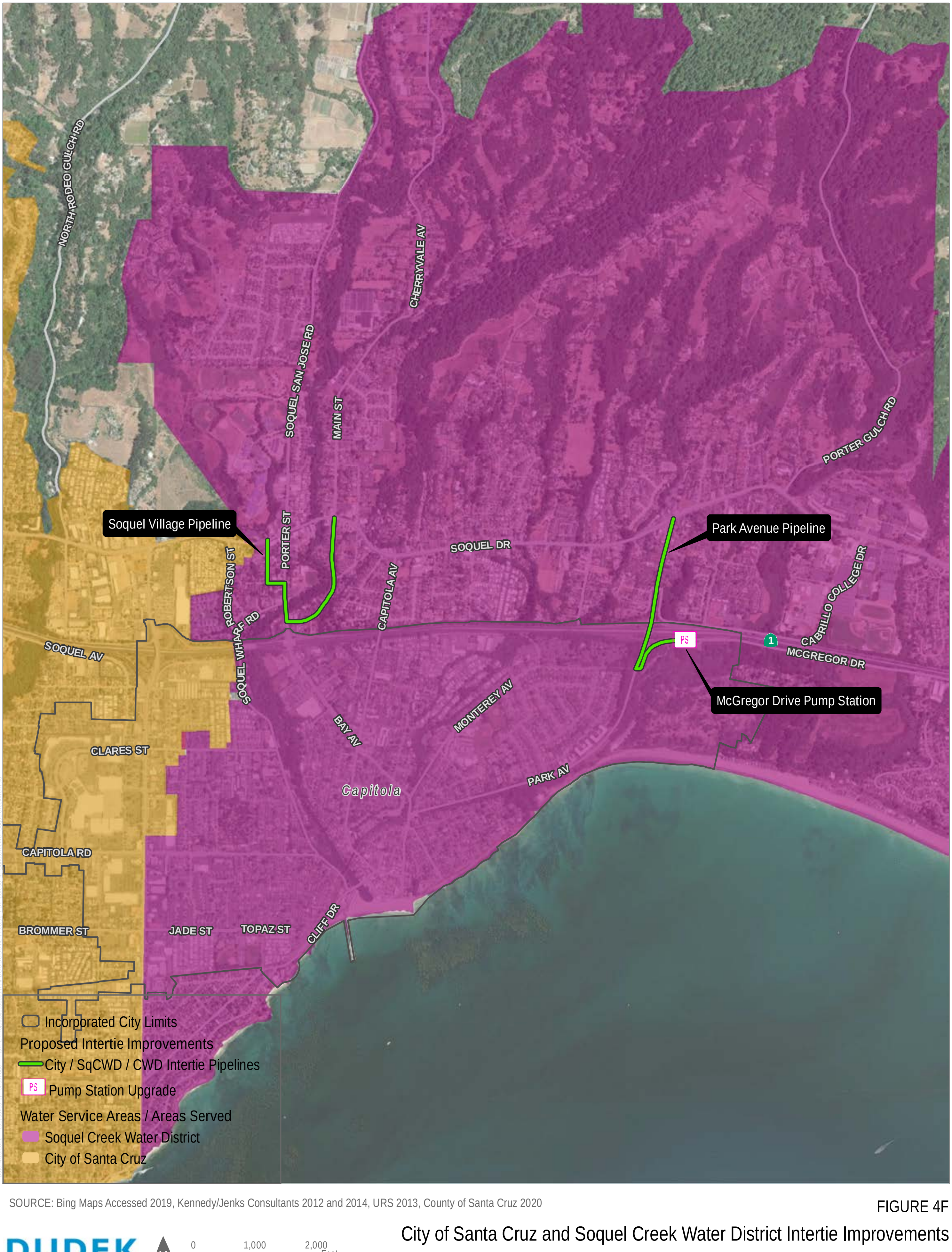
FIGURE 4E

City of Santa Cruz and Scotts Valley Water District Intertie

Santa Cruz Water Rights Project

DUDEK

0 500 1,000 Feet

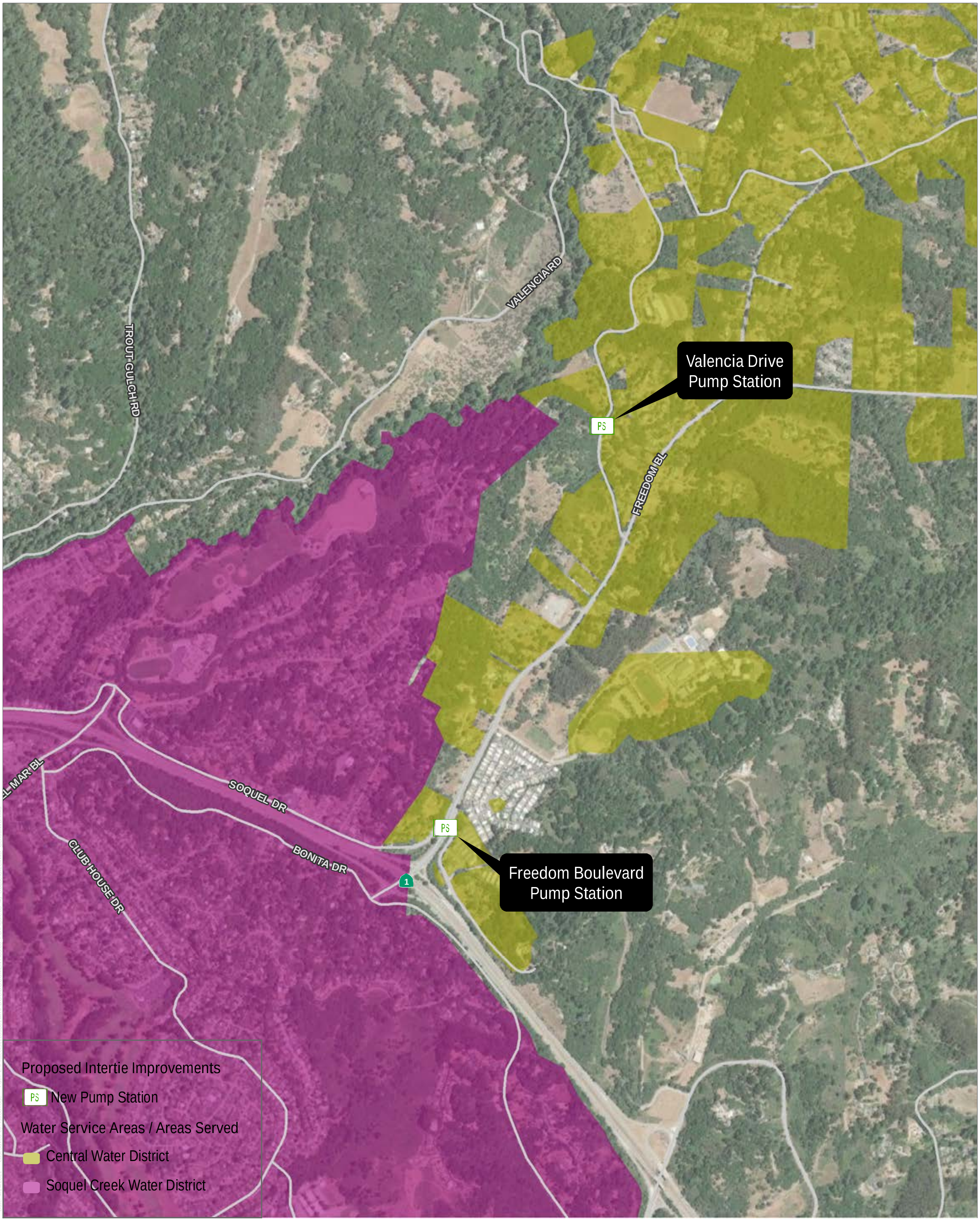



SOURCE: Bing Maps Accessed 2019, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

FIGURE 4F

City of Santa Cruz and Soquel Creek Water District Intertie Improvements

Santa Cruz Water Rights Project




SOURCE: Bing Maps Accessed 2019, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

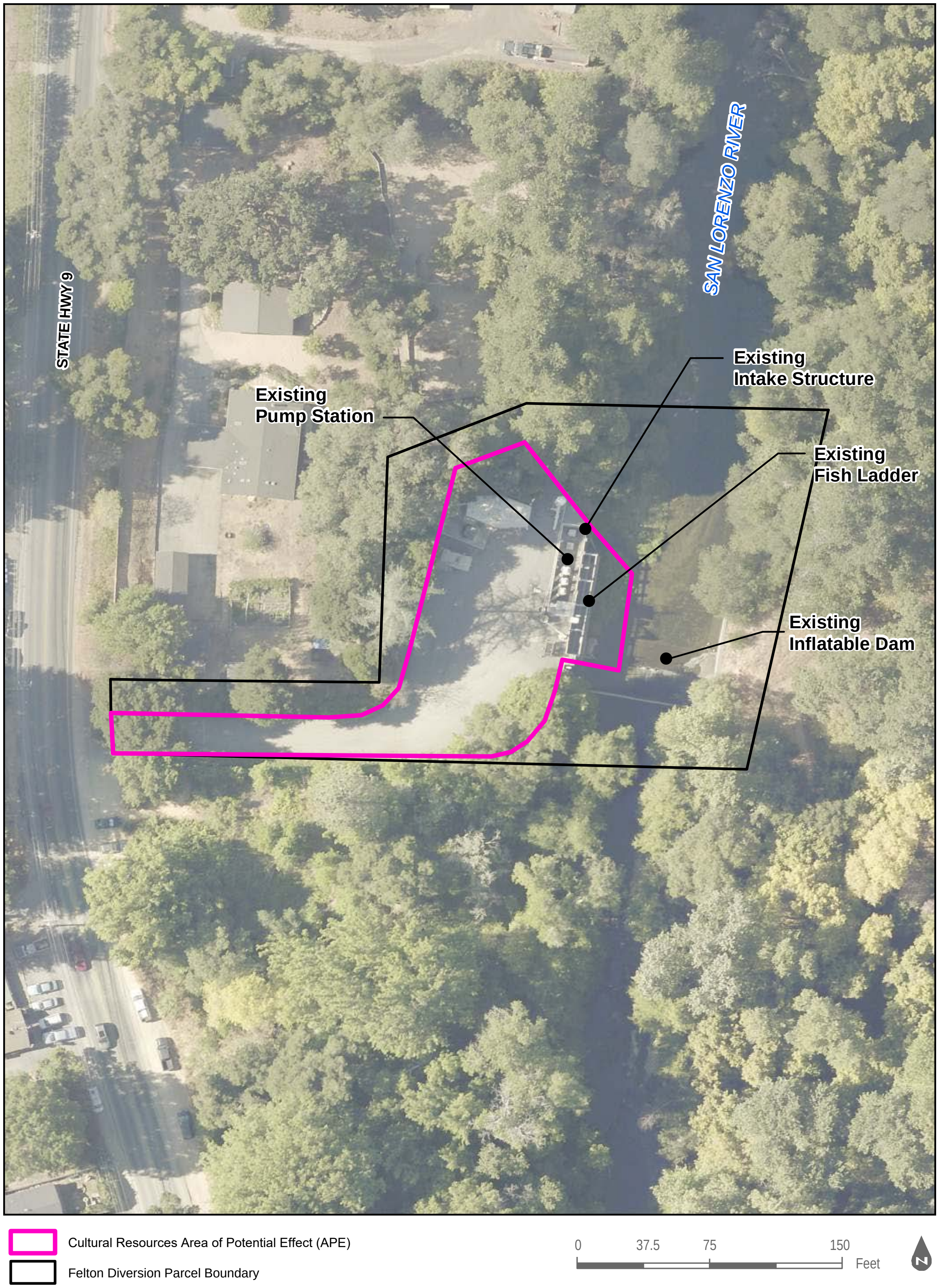
DUDEK

0 750 1,500 Feet

FIGURE 4G

Soquel Creek Water District and Central Water District Intertie Improvements

Santa Cruz Water Rights Project



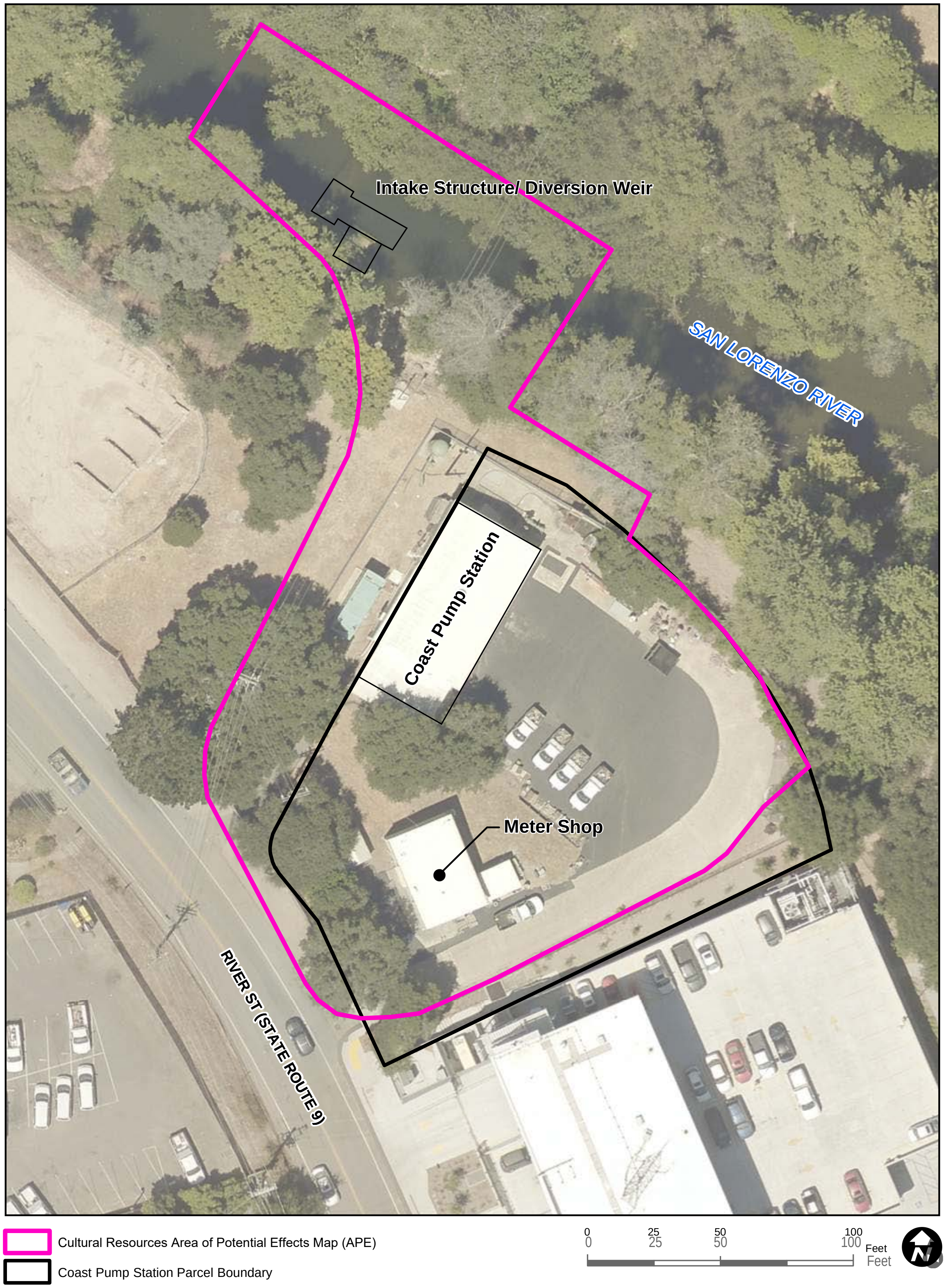

SOURCE: City of Santa Cruz 2019

FIGURE 4H

Felton Diversion Fish Passage Improvements Site - Area of Potential Effects Map

Santa Cruz Water Rights Project

DUDEK




SOURCE: City of Santa Cruz 2021

FIGURE 4I

Tait Diversion and Coast Pump Station Facility Improvements Site - Area of Potential Effects Map

Santa Cruz Water Rights Project

DUDEK

# Appendix B

## Confidential Records Search Results

*Confidential Materials are on file with the City*

# Appendix C

## Native American Information Outreach

*Confidential Materials are on file with the City*

# Appendix D

## Other Interested Party Correspondence

725 FRONT STREET, SUITE 400
SANTA CRUZ, CALIFORNIA 95060
T 831.600.1400 F 831.600.1401

June 3, 2020

Frank Perry
Capitola Historical Museum
410 Capitola Avenue
Capitola, CA 95010

*Subject: Santa Cruz Water Rights Project*

Dear Mr. Perry,

Dudek has been retained by the City of Santa Cruz Water Department to conduct a cultural resources study for the Santa Cruz Water Rights Project (Proposed Project). The Proposed Project involves the water system and water service area of the City of Santa Cruz (City) and the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figures 1a, 1b, and 1c enclosed).

The Santa Cruz Water Department is proposing to improve flexibility in operation of the City's water system while enhancing stream flows for local anadromous fisheries. The Proposed Project would improve operational flexibility of the water system within existing allocations to allow better use of limited water resources in the service areas. The Proposed Project involves water rights modifications to expand authorized place of use (POU), to better utilize existing diversions, and to extend the City's time to put water to full beneficial use. Additionally, the Proposed Project could result in facility upgrades to the Beltz Well System, specifically wells 8, 9, 10, and 12.

As part of our study, we are consulting all regional historical organizations to determine if there are any known historic or cultural resources that may be affected by the Proposed Project. Your efforts in this process will provide invaluable information for the proper identification and treatment of such resources. If you have any information regarding known cultural resources in the Proposed Project area, please feel free to contact me via phone or email (listed below). All comments, emails, or letters received will be included in the reports generated by this study. Thank you for your time regarding our request.

Sincerely,

Fallin Steffen

Fallin Steffen, MPS
Architectural Historian

P: 831.400.8882 // E: fsteffen@dudek.com

**Enclosure**

Figure 1a. Project Location

Figure 1b. Project Location

Figure 1c. Project Location

725 FRONT STREET, SUITE 400
SANTA CRUZ, CALIFORNIA 95060
T 831.600.1400 F 831.600.1401

June 3, 2020

Pajaro Valley Historical Association
332 East Beach Street
Watsonville, CA 95076

*Subject: Santa Cruz Water Rights Project*

To Whom It May Concern:

Dudek has been retained by the City of Santa Cruz Water Department to conduct a cultural resources study for the Santa Cruz Water Rights Project (Proposed Project). The Proposed Project involves the water system and water service area of the City of Santa Cruz (City) and the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figures 1a, 1b, and 1c enclosed).

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Fallin Steffen, MPS
Architectural Historian

P: 831.400.8882 // E: fsteffen@dudek.com

**Enclosure**

Figure 1a. Project Location

Figure 1b. Project Location

Figure 1c. Project Location

725 FRONT STREET, SUITE 400
SANTA CRUZ, CALIFORNIA 95060
T 831.600.1400 F 831.600.1401

June 3, 2020

San Lorenzo Valley Museum
12547 CA-9
Boulder Creek, CA 95006

*Subject: Santa Cruz Water Rights Project*

To Whom It May Concern:

Dudek has been retained by the City of Santa Cruz Water Department to conduct a cultural resources study for the Santa Cruz Water Rights Project (Proposed Project). The Proposed Project involves the water system and water service area of the City of Santa Cruz (City) and the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figures 1a, 1b, and 1c enclosed).

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P: 831.400.8882 // E: fsteffen@dudek.com

**Enclosure**

Figure 1a. Project Location

Figure 1b. Project Location

Figure 1c. Project Location

725 FRONT STREET, SUITE 400
SANTA CRUZ, CALIFORNIA 95060
T 831.600.1400 F 831.600.1401

June 3, 2020

Ashley Holmes
Santa Cruz Museum of Art and History
705 Front Street
Santa Cruz, CA 95060

*Subject: Santa Cruz Water Rights Project*

Dear Holmes:

Dudek has been retained by the City of Santa Cruz Water Department to conduct a cultural resources study for the Santa Cruz Water Rights Project (Proposed Project). The Proposed Project involves the water system and water service area of the City of Santa Cruz (City) and the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figures 1a, 1b, and 1c enclosed).

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Fallin Steffen

Fallin Steffen, MPS
Architectural Historian

P: 831.400.8882 // E: fsteffen@dudek.com

**Enclosure**

Figure 1a. Project Location

Figure 1b. Project Location

Figure 1c. Project Location

725 FRONT STREET, SUITE 400
SANTA CRUZ, CALIFORNIA 95060
T 831.600.1400 F 831.600.1401

June 3, 2020

Felicia Van Stolk
Santa Cruz Museum of Natural History
1305 E Cliff Drive
Santa Cruz, CA 95062

*Subject: Santa Cruz Water Rights Project*

Dear Ms. Van Stolk,

Dudek has been retained by the City of Santa Cruz Water Department to conduct a cultural resources study for the Santa Cruz Water Rights Project (Proposed Project). The Proposed Project involves the water system and water service area of the City of Santa Cruz (City) and the water service areas of San Lorenzo Valley Water District (SLVWD), Scotts Valley Water District (SVWD), Soquel Creek Water District (SqCWD), and Central Water District (CWD). The Proposed Project is located within Santa Cruz County and is generally bounded by the unincorporated communities of Aptos and Le Selva Beach on the east, Bonny Doon Road on the west, Boulder Creek on the north, and the Pacific Ocean on the south (see Figures 1a, 1b, and 1c enclosed).

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Sincerely,

Fallin Steffen

Fallin Steffen, MPS
Architectural Historian

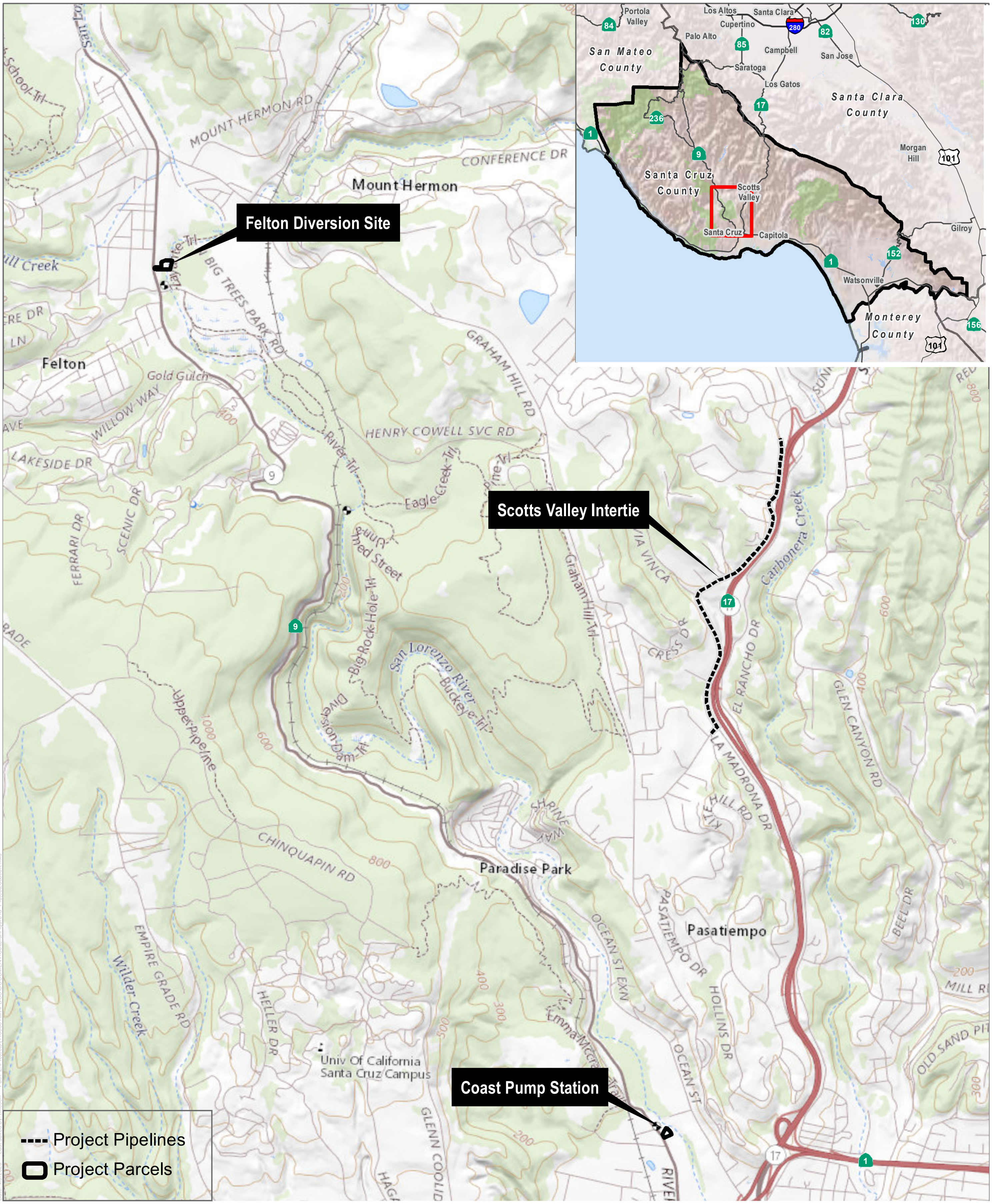
P: 831.400.8882 // E: fsteffen@dudek.com

**Enclosure**

Figure 1a. Project Location

Figure 1b. Project Location

Figure 1c. Project Location




SOURCE: USGS National Map 2019
Felton & Santa Cruz Quadrangles

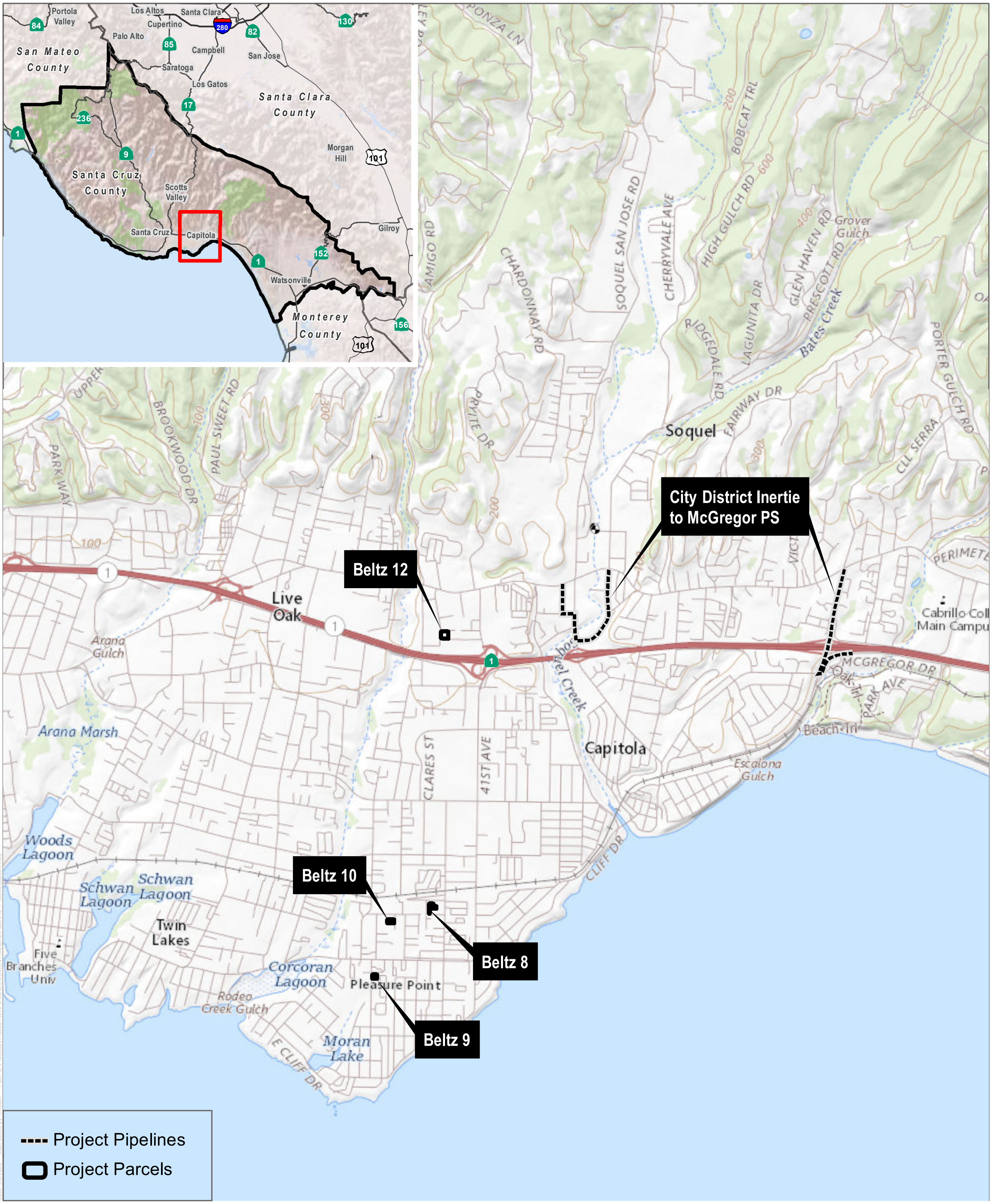
DUDEK

0 1,500 3,000 Feet

**FIGURE 1A**

Project Location

Santa Cruz Water Rights Project




SOURCE: USGS National Map 2019
Laural & Soquel Quadrangles

DUDEK

0 1,500 3,000 Feet

**FIGURE 1B**

Project Location

Santa Cruz Water Rights Project


SOURCE: USGS National Map 2019
Soquel & Watsonville West Quadrangles

DUDEK

0 1,500 3,000 Feet

**FIGURE 1C**

Project Location

Santa Cruz Water Rights Project

| | |
|---|---|
| **From:** | Capitola Museum |
| **To:** | Fallin Steffen |
| **Subject:** | Re: Santa Cruz Water Rights Project |
| **Date:** | Friday, June 26, 2020 9:36:36 AM |
| **Attachments:** | image003.png |

Can't remember if I replied to this, but I see no impacts on historical sites within the City of Capitola.

Sincerely,

Frank Perry, Curator
Capitola Historical Museum

On Wed, Jun 3, 2020 at 1:05 PM Fallin Steffen <fsteffen@dudek.com> wrote:

> Hello Mr. Perry,
>
> I am reaching out today on behalf of Dudek and the City of Santa Cruz Water Department to provide you with some information about the Santa Cruz Water Rights Project. As part of the cultural resources study for the proposed project, Dudek is consulting all regional historical organizations to determine if there are any known historic or cultural resources that may be within the proposed project area. Please see the attached letter and map for more information about the nature and location of the project, and please feel free to contact me should you have questions or information regarding cultural or historical resources in this area.
>
> Thank you,
>
> **Fallin Steffen**
>
> Architectural Historian
>
> DUDEK
>
> m: 831.400.8882
>
> www.dudek.com

| | |
|---|---|
| **From:** | Fallin Steffen |
| **To:** | Pajaro Valley Historical Association |
| **Cc:** | John Schlagheck; Katie Haley |
| **Subject:** | RE: Santa Cruz Water Rights Project |
| **Date:** | Thursday, June 4, 2020 8:13:47 AM |
| **Attachments:** | image003.png<br>image004.png |

Hi Lou,

Thank you for your response and for sending these photos along – very helpful! I realize the borders of the Valley are disputed, so I wanted to make sure to include PVHA in case the organization had knowledge of particular local cultural sites that may fall within the project area.

Thanks again,


**Fallin Steffen**
Architectural Historian

DUDEK
m: 831.400.8882
www.dudek.com


**From:** Pajaro Valley Historical Association <info@pajarovalleyhistory.org>
**Sent:** Wednesday, June 3, 2020 4:32 PM
**To:** Fallin Steffen <fsteffen@dudek.com>; Pajaro Valley Historical Association <info@pajarovalleyhistory.org>
**Subject:** Re: Santa Cruz Water Rights Project

Fallin,

Thanks for reaching out to us. We are enduring SIP and working with reduced staff.

PVHA mission is to preserve the history of the Pajaro Valley. Where that valley starts and ends has been a battle. So we do get bits and drabs of information that may be considered our purview. Our expertise is not in the defined borders of your project. However we have some documentation a researcher may want to pursue. I've included a Real Estate Areal collection dating that we acquired rom 1972. Not sure what dates would be useful for you. These rough shots are of the exterior and introductory pages to the areal photos of the area your email describes as your intended project. But I'm sure you must have already sourced this information separately?

Images of collection attached. Let me know if you have any questions.

Lou Arbanas - volunteer PVHA

On Wed, Jun 3, 2020 at 1:05 PM Fallin Steffen <fsteffen@dudek.com> wrote:

> Hello,
>
> I am reaching out today on behalf of Dudek and the City of Santa Cruz Water Department to provide you with some information about the Santa Cruz Water Rights Project. As part of the cultural resources study for the proposed project, Dudek is consulting all regional historical organizations to determine if there are any known historic or cultural resources that may be within the proposed project area. Please see the attached letter and map for more information about the nature and location of the project, and please feel free to contact me should you have questions or information regarding cultural or historical resources in this area.
>
> Thank you,
>
> **Fallin Steffen**
> Architectural Historian
>
> DUDEK
> m: 831.400.8882
> www.dudek.com

| | |
|---|---|
| **From:** | Fallin Steffen |
| **To:** | Felicia Van Stolk |
| **Cc:** | Katie Haley |
| **Subject:** | RE: Santa Cruz Water Rights Project |
| **Date:** | Wednesday, June 3, 2020 2:20:22 PM |
| **Attachments:** | image001.png<br>image002.png |

---

Hi Felicia,

Thank you for looking into this and responding so quickly. I hope you have a nice rest of your week.

Best,

**Fallin Steffen**
Architectural Historian

DUDEK
m: 831.400.8882
www.dudek.com

**From:** Felicia Van Stolk <felicia@santacruzmuseum.org>
**Sent:** Wednesday, June 3, 2020 2:13 PM
**To:** Fallin Steffen <fsteffen@dudek.com>
**Cc:** Katie Haley <khaley@dudek.com>
**Subject:** Re: Santa Cruz Water Rights Project

Thank you for reaching out. Our collections records do not indicate that any cultural or historic resources have come from the proposed project area. I recommend that you reach out to the Amah Mutsun Tribal Band, in whose unceded territory this project falls.

**Felicia B. Van Stolk**
Executive Director
felicia@santacruzmuseum.org
(831) 420-6115 x 11 | Mon-Fri
She/Her/Hers

**Santa Cruz Museum of Natural History**
*Connecting people with nature and science to inspire stewardship of the natural world.*
**santacruzmuseum.org | Facebook | Instagram | Twitter**

On Wed, Jun 3, 2020 at 1:05 PM Fallin Steffen <fsteffen@dudek.com> wrote:

> Hello Ms. Van Stolk,
> I am reaching out today on behalf of Dudek and the City of Santa Cruz Water Department to provide you with some information about the Santa Cruz Water Rights Project. As part of the cultural resources study for the proposed project, Dudek is consulting all regional historical organizations to determine if there are any known historic or cultural resources that may be within the proposed project area. Please see the attached letter and map for

more information about the nature and location of the project, and please feel free to contact me should you have questions or information regarding cultural or historical resources in this area.

Thank you,

**Fallin Steffen**
Architectural Historian

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# Appendix E

## Department of Parks and Recreation 523 Forms

State of California C The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

# PRIMARY RECORD

Primary #
HRI #
Trinomial
**NRHP Status Code** 6Z

Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by recorder) Beltz 8 Aquifer Storage and Recovery Facility

**P1. Other Identifier:**

***P2. Location:** **Not for Publication** n **Unrestricted**

***a. County** Santa Cruz **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Soquel **Date** 1994 **T** 11S ; **R** 1W ; **Sec** - ; Mount Diablo **B.M.**

c. Address City Santa Cruz Zip 95062

d. UTM: (Give more than one for large and/or linear resources) Zone 10S, 591831.00 mE/ 4091692.00 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)

The Beltz 8 ASR facility is located on a mid-block parcel surrounded by a chain-link fence. The fence is fitted with privacy slats, secures the perimeter of the entire property, and features a recessed gated entry to the site, which can be accessed by a private driveway off of 38th Avenue just north of Roland Drive. Assessor Parcel Number: 032-021-31.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Beltz Well 8 ASR facility is located on a municipal property located in the County of Santa Cruz and demonstrates a layered development history. ***See Continuation Sheet**

***P3b. Resource Attributes:** (List attributes and codes) HP9. Public Utility Building

***P4.Resources Present:** n Building n Structure Object Site District Element of District Other (Isolates, etc.)

**P5b. Description of Photo:** (view, date, accession #) View of Beltz 8 Control Building, looking west (IMG_0217)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

***P6. Date Constructed/Age and Source:** n Historic Prehistoric Both
1. Iron and Manganese Removal Plant, 1971
(Santa Cruz Sentinel 1967)
2. Beltz 8, 1971
(City of Santa Cruz 1998)

***P7. Owner and Address:**
City of Santa Cruz
809 Center Street
Santa Cruz, CA 95060

***P8. Recorded by:** (Name, affiliation, and address) Fallin Steffen, MPS
Dudek
725 Front Street, Suite 400
Santa Cruz, CA 95060

***P9. Date Recorded:** May 6, 2020

***P10. Survey Type:** (Describe) Intensive Pedestrian

***P11. Report Citation**: (Cite survey report and other sources, or enter "none.") Dudek. 2020. *Cultural Resources Inventory and Evaluation Report for the Santa Cruz Water Rights Project.*

***Attachments:** NONE n Location Map n Continuation Sheet n Building, Structure, and Object Record
Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
Artifact Record Photograph Record Other (List):

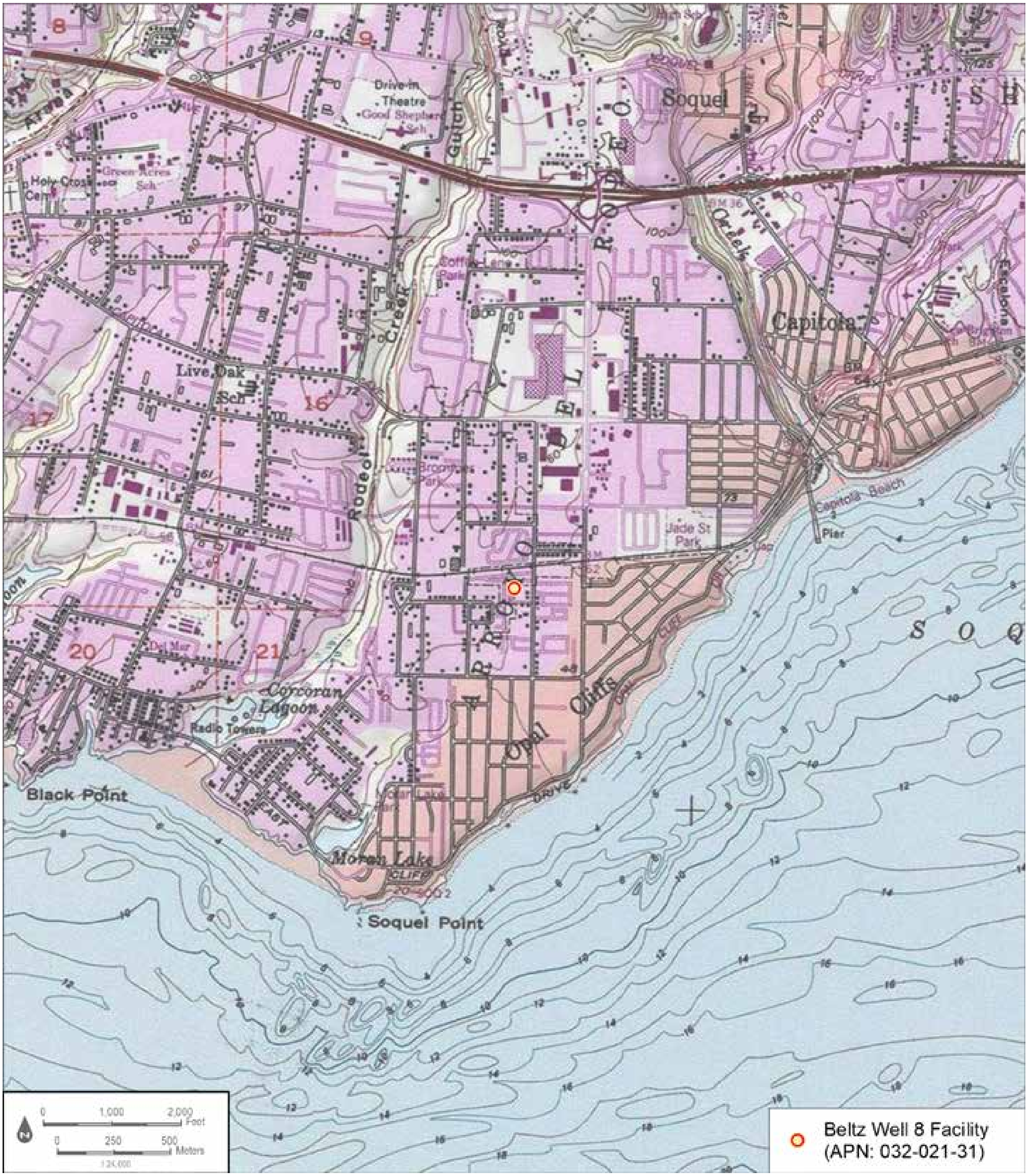
**State of California C Natural Resources Agency**
**DEPARTMENT OF PARKS AND RECREATION**

# LOCATION MAP

Primary #
HRI#
Trinomial

**Page** 2 **of** 31 ***Resource Name or #** (Assigned by recorder) Beltz 8 Aquifer Storage and Recovery Facility

***Map Name:** Soquel Quadrangle ***Scale:** 1:24,000 ***Date of map:** 1994



**State of California C The Resources Agency** Primary #
**DEPARTMENT OF PARKS AND RECREATION** HRI#

# BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** (Assigned by recorder) Beltz 8 Aquifer Storage and Recovery Facility

**Page** 3 **of** 31 ***NRHP Status Code** 6Z

B1. Historic Name: Beltz Well No. 6
B2. Common Name: Beltz 8
B3. Original Use: Well B4. Present Use: Aquifer Storage and Recovery
***B5. Architectural Style:**
***B6. Construction History:** (Construction date, alterations, and date of alterations)

The Iron and Manganese Removal Plant was designed by Kingman Engineers and completed in 1971 and subsequently expanded in 1985. Well Beltz 6 was damaged in the 1989 Loma Prieta earthquake and later replaced by Well Beltz 8 in 1998). Presently the site contains the Iron and Manganese Removal Plant, Well Beltz 8, and limited landscaping (NETR 2020; SCWD 1967: D).***See Continuation Sheet**

***B7. Moved?** n **No** **Yes** **Unknown** **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Iron and Manganese Removal Plant: Kingman Engineers; Beltz 8: Unknown
b. Builder: Unknown
***B10. Significance: Theme** **Area**

**Period of Significance** **Property Type** **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

In conclusion, the Beltz 8 Aquifer Storage and Recovery Facility does not appear eligible for listing in the NRHP, the CRHR, or the Santa Cruz County HRI due to a lack of historical associations, architectural merit, and compromised integrity. As such, this property does not appear to be a historic property under Section 106 of the NHPA or a historical resource under CEQA.
***See Continuation Sheet**

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**
***See Continuation Sheet**

B13. Remarks:

***B14. Evaluator:** Fallin Steffen, MPS, for Dudek
***Date of Evaluation:** June 5, 2020

(This space reserved for official comments.)

***P3a. Description:**

**Iron and Manganese Removal Plant (1971)**
The Iron and Manganese Removal Plant contains a Control Building, two pressure filters, a combination aerator and sump pump, and a wash water recovery tank.

**Control Building**
The Control Building is a simple utilitarian-style building constructed from flat concrete bricks that features a gabled roof complete with vertical wood siding in the gable end (Exhibits 1 and 2). The 1985 addition to the south end of the building is also constructed of concrete brick and features a shed roof that extends from the south elevation of the building. Entry to the building is accessed via one of three simple metal doors, two of which feature a single small window. Otherwise, the building does not contain any fenestration. Metal conduit is present in sizeable quantities on the exterior painted surface of the building.

Exhibit 1. Control Building, east elevation, view looking west (IMG_0217).

Exhibit 2. Control Building, west elevation, view looking southeast (IMG_0222).

**Pressure Filters**

The two cylindrical pressure filters are cylindrical tanks that measure 8 feet by 34 feet (Exhibit 3). They are situated to the north of the control building and each feature a concrete pad foundation.

Exhibit 3. Control Building, west elevation, view looking southeast (IMG_0222).

**Aerator and Sump Pump**

The irregular-shaped aerator sump pump stands approximately two stories high and is housed in metal sheeting (Exhibit 4).

Exhibit 4. Aerator and Sump Pump, view looking northwest (IMG_0218).

**Wash Water Recovery Tank**
The cylindrical wash water recovery tank stands approximately three stories tall and is constructed of metal sheets that have been riveted together to form a continuous surface (Exhibit 5). A release door is visible at the ground level, and the top of the structure is accessed via an enclosed ladder located on the west side of the structure.

Exhibit 5. Wash Water Recovery Tank, view looking north (IMG_0219).

**Beltz 8 (1998)**

Beltz 8 is located on the eastern side of the irregularly shaped parcel. The visible portions of the well are simply metal piping extending above and then back beneath the ground (Exhibit 6).

Exhibit 6. Beltz 8, view looking northeast (IMG_0215).

***B6. Construction History:**
The following alterations were identified during a review of the photographs taken during the pedestrian survey and during the course of archival research. Unless indicated, the dates of these alterations is unknown.

**Iron and Manganese Removal Plant (1971, expanded 1985)**

- Expansion of plant including an addition to the control building, 1985 (Kennedy/Jenks Engineers 1985: G-4)
- Removal of wastewater treatment tank
- Various mechanical, pump, and pipeline upgrades

**Overall Site**

- Installation of Beltz 8 in 1998 (Dames and Moore 1998: C101)
- Removal of original Beltz 6, associated appurtenances, and well house structure

***B10. Significance:**

**Early Development of Water Management in Santa Cruz County**

The following context discusses the development of the SCWD, which provides municipal water to residents of the City and surrounding areas within the County. The SCWD water system serves approximately 23,700 residential, commercial, industrial, municipal, and irrigation accounts within approximately 30 square miles, encompassing the entire City and select contiguous County areas (EKI 2011: 9).

Several miles north of the evolving city center at the base of the Santa Cruz Mountains, multiple mountain streams and tributaries carve deep channels and valleys through the dense redwood and oak timberlands. The extensive virgin forests and the rich underground deposits of lime in the Santa Cruz Mountains attracted opportunistic settlers and purveyors in the mid- to late-1800s who sought to harness the power of the mountain streams to move the goods located in the remote area to market (Hoover et al. 2002: 456).

The California Gold Rush of 1848 accelerated the desirability of land across the state, and before long, access to water in the drought-prone region took on the highest level of importance. Instead of adopting an equal water access structure in the fashion of the eastern United States, the wealth potential of waterways during the Gold Rush shaped California water law into a “first in time, first in right” system known as Prior Appropriation. Under this system, riparian rights were granted to the first person to use a river or tributary for beneficial consumption like mining, farming, milling, or as-needed domestic use. When land in the Santa Cruz Mountains was subdivided and sold, access to the rivers and streams was enormously important. Not only did it mean that the initial use set out for a waterway was the primary use, it also meant that any subsequent uses could not supersede or negatively affect the chief use. The order that claims were recognized during this period established the foundation of the complicated system of water allocation rights still in use today in the County (Pisani 1984: 246–247).

Many of these powerful mountain streams and tributaries were utilized by early landowners and tenant entrepreneurs to make a profit from the natural resources that formed the early economic basis of the County. Several of these mountain creeks still bear the names of the first men who established mills or permanently settled beside them. Majors Creek was named for Joseph L. Majors who established a grist mill on the creek prior to serving as the County Treasurer between 1850 and 1853. Liddell Creek was named for George Liddell who moved to the Santa Cruz Mountains and established a sawmill on the creek in 1851. Newell Creek was named for Addison Newell who established a farm in the steep, v-shaped valley on the banks of the creek in 1867 (Koch 1973: 33–34; Clark 2008: 174, 187, 215).

For others, the streams presented pure economic opportunity. The first power sawmill in California was built on Rancho Zayante by Isaac Graham in the 1842 and was driven by the waters of Zayante Creek. Isaac E. Davis and Albion P. Jordan of the Davis and Jordan Lime Company purchased a portion of Rancho Cañada del Rincon in 1853 as a promising quarry site. They also utilized the falling water on the property to process local lumber into fuel for their many kilns. The California Powder Works was established in 1865 on the bank of the San Lorenzo River on a portion of Rancho Carbonera. The Powder Works used the river to grind raw materials used in the production of the first smokeless powder manufactured on the west coast of the United States. By 1868, there were a sizable number of business and industries that relied on water from County waterways to operate, including 12 water-powered lumber mills, 10 steam-powered lumber mills, and 9 shingle mills in operation within the County (Clark 2008: 130–131; Hoover et al. 2005: 456; Koch 1973: 36–37; Brown 2011: 4).

As water management techniques were being applied to a variety of industry in the County, the successful technologies developed and used in early natural resource harvesting such as flumes and pumps prompted local residents in Santa Cruz to consider why these were not being put to use for the benefit of drinking water. Furthermore, the up-stream uses of many of these industries that had developed along streams in the Santa Cruz Mountains had resulted in a less than desirable water quality downstream.

## Early Water Development in Santa Cruz City (1864–1917)

### Private Development (1864–1916)

Beginning in the 1860s, acute cyclical water shortages and pollution prompted the development of several for-profit water systems in Santa Cruz. By the end of the 1880s, the two surviving major water companies, F.A. Hihn Water Works and the Santa Cruz Water Company, were joined into a single private business that competed with the new municipal water system that began in 1890 for almost three decades before being purchased by the City and integrated into the municipal system in 1916.

#### *F.A. Hihn Water Works (1864)*

In 1864, prompted by the issue of shortage, young entrepreneurs Elihu Anthony and Fredrick A. Hihn implored the Board of County Supervisors to allow them to dig trenches and lay redwood pipes to transport water throughout Santa Cruz. The “wooden tubes” were chosen as an inexpensive alternative to iron pipes (Santa Cruz Weekly Sentinel 1864a: 2). The source of the water was an 8,000-gallon reservoir on Anthony’s property supplied by water from Scott’s Creek, and eager recipients of the water could gain access for a fee. (Brown 2011: 1–2; Santa Cruz Weekly Sentinel 1864: 2).

By 1876, the 1864 system was known as the F.A. Hihn Water Works, and it was the largest provider of water in the newly chartered City, with Dodero and Carbonero Creeks constituting its primary sources. The company predated the incorporation of Santa Cruz by 2 years (Koch 1973: 35; Brown and Dunlap 1956: 14; City of Santa Cruz 2020).

#### *The Santa Cruz Water Company (1866)*

In 1866 a new, fee-based, private water supply company was founded to share in the lucrative profits of the F.A. Hihn Water Works. A man named E. Morgan acquired rights to the waters of the San Lorenzo River in 1866, just prior to the town of Santa Cruz being officially incorporated later that year. He used these rights to install a section of pipework conveying water to the area known then as the “The Flats,” which comprises the modern area of Pacific Avenue and Front Street (SCWD n.d.: 1).

In 1876, Morgan sold his system to a wealthy man from San Francisco named H.K. Lowe. Under Lowe’s guidance, the Santa Cruz Water Company incorporated in July 1876 and began construction on a pumping station on the San Lorenzo River approximately 1 mile upstream from the City, as well as a new reservoir located on High Street. Morgan retained 50 company shares and became the resident engineer and superintendent of the Santa Cruz Water Company. By the end of 1876, the company had also installed a Branciforte Creek diversion to deliver water via a pipeline to a new reservoir located at the base of School Street. As the City continued to grow and the steam-powered pumping plant installed on the San Lorenzo River became the source of repeated water-quality concerns, the Santa Cruz Water company acquired partial water appropriation rights to the Majors ( then called

Cojo Creek) in 1881. After the acquisition, the company scrapped the whole San Lorenzo pumping plant for $800 (Santa Cruz Weekly Sentinel 1877a: 1; 1877b: 2; SCWD n.d.: 1).

For the next several years, the Santa Cruz Water Company focused its attention on the construction of a pipeline to divert water from Majors Creek. This effort was very costly and the company slipped into dire financial condition. In August 1886, the company along with all of its appurtenances was sold to the City, financed through the sale of bonds from the Bank of Santa Cruz and the Anglo-Californian Bank. Hihn bitterly opposed the issuance of the bonds and contested their legality in court. The matter reached the Supreme Court and the election in favor of the bonds was declared invalid in 1887. By this time however, the City had already operated the water system for over a year when it was re-conveyed to private owners in 1887 (Santa Cruz Weekly Sentinel 1882: 3; SCWD n.d.: 1; Santa Cruz Surf 1890a: 1).

The City voted again in March 1888 to put up the bonds necessary to purchase the Santa Cruz Water Company system from the private owners. However, while the City was in the process of securing the bonds for the purchase, the Santa Cruz Water Company system was covertly sold to F.A. Hihn in a private, backroom transaction before the City could obtain legal ownership. Hihn quickly consolidated the Santa Cruz Water Company system with his own system of works. This transaction effectively severed any opportunity the City had of acquiring an established water works system with which to launch their own public water system (Santa Cruz Daily Surf 1888a: 3, 1888b: 2; Santa Cruz Surf 1890a: 1).

F.A. Hihn continued to operate the consolidated system as the Santa Cruz Water Company and expanded the service area east into the Seabright neighborhood until his death in 1913 (SCWD n.d.: 1).

**Public Development (1890–1917)**

During the 1880s, the rising price of these fee-based water systems like the F.A. Hihn Water Works and the Santa Cruz Water Company prompted the City to explore their own, city-owned, public water option. After several disappointing attempts to acquire an existing system of water works, the City revised its approach and began planning to build a diversion system and storage reservoir from the ground up, prompting the development of the first municipal water project in Santa Cruz, the Laguna Creek Dam and the Cowell Reservoir. This project led the way for other ambitious water system development in the City including several other north coast stream diversions and the first pumping plant on the San Lorenzo River. In 1916, the City acquired the rights to the Santa Cruz Water Company and began to tie in the systems as one, forming the basis of the modern SCWD system used today.

***The Laguna Creek Dam and the Cowell Reservoir (1890)***

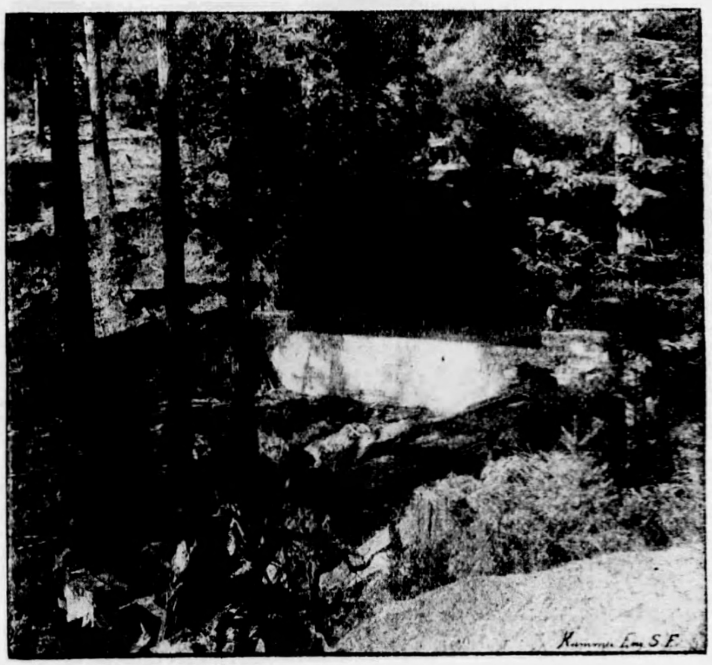
In July 1888, the Common Council secured the water rights to the Laguna Creek. “The Laguna,” the *Santa Cruz Sentinel* reported, “is a rushing, roaring mountain stream, entirely rock bound and tree shaded above the falls where it is proposed to take the water out (Santa Cruz Sentinel 1888: 2).” The stream was capable of supplying 1.4 million gallons towards a City-owned water works. Plans were finally in motion for the construction of the first city-owned water works, supplied through a new pipeline by the waters of Laguna Creek, with reserve storage in a new City reservoir on Henry Cowell’s ranch property known as the Cowell Street Reservoir, which was located roughly at the present site of the U.C. Santa Cruz Arboretum. The *Santa Cruz Surf* reported with excitement that the new project would mean open, municipal water so that each citizen of Santa Cruz could finally “quench his thirst with free water without ‘dropping a nickel in the slot’” (Santa Cruz Surf 1890a: 1).

The bonds required to fund the construction of the City water works were secured within the following year, and in July 1889, a civil engineer named G.S. Schussler issues a report in favor of the project that valued the proposed undertaking at $260K (Santa Cruz Surf 1889a: 3, 1889b: 3).

The prominent San Francisco firm Risdon Iron Works was selected as the contractor, who were known for producing the great iron pipes for steam ships. The *Santa Cruz Surf* reported that work on the dam on Laguna Creek and the dam at the reservoir site would be completed by the San Francisco contracting firm Kelso and Dare (Santa Cruz Surf 1889c: 3).

On September 30, 1890, the *Santa Cruz Surf* reported that the reservoir and the pipeline of the City water works were nearly complete. The article published an in-depth description of the new Laguna Creek Dam (Exhibit 7), stating that (Santa Cruz Surf 1890b: 3):

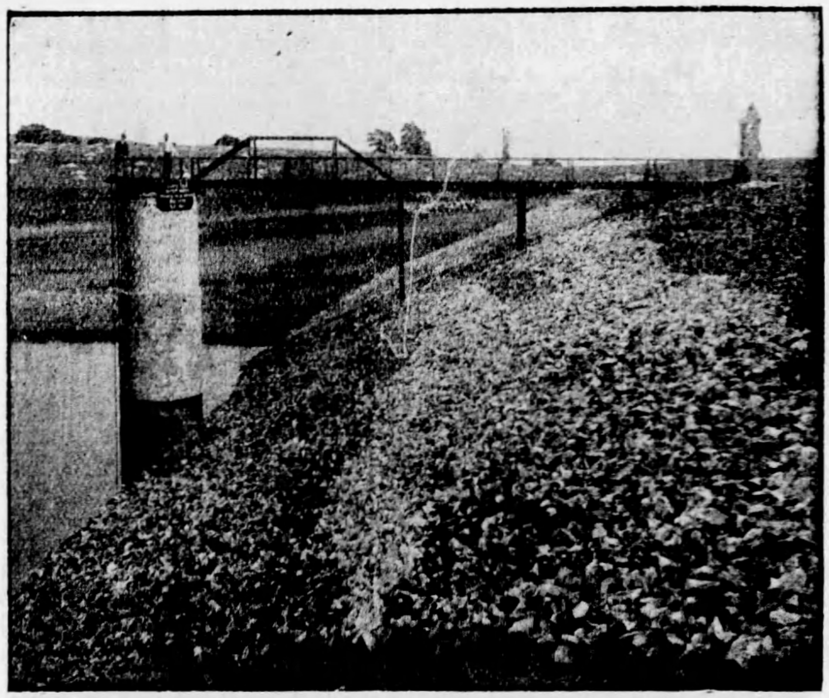
> The dam across Laguna Creek just above the Henneuse place is one of the finest pieces of rubble stone work in the county and not to be excelled anywhere. The granite rocks used in its construction were taken from the bed of the creek, some of them weighing as much as two tons. The water will first be diverted from the Laguna at this point into a flume 3x4 feet and one hundred feet in length, also built of solid masonry. This is nearly level and terminates in a basin two feet lower, and into which the sand and sediment which may be carried in the water in a time of storm will settle. Gates are provided by means of which this basin can be cleared as often as required. From here the water will enter the 14-inch main through which it will be carried to the storage reservoir. This pipe follows the canyon of the Laguna creek as nearly as possible to the county road a distance of about three miles.



THE RETAINING DAM ON LAGUNA CREEK.

**Exhibit 7.** The earliest known photograph of the Laguna Creek Masonry Dam published in the Santa Cruz Surf in 1892 (Santa Cruz Surf 1892: 2).

On October 18, 1890, the last pipe connecting the Laguna Creek to the new Cowell Street Reservoir was put into position (Exhibit 8). The pipeline emptied into the reservoir for storage and eventual distribution to the homes and businesses of Santa Cruz (Santa Cruz Surf 1890c: 3).



THE STORAGE RESERVOIR (60,000,000 GALLONS).

**Exhibit 8.** The earliest known photograph of the Cowell Street Reservoir published in the *Santa Cruz Surf* in 1892 (Santa Cruz Surf 1892: 2).

***Reggiardo Creek Diversion (Flume 1891, Dam 1912)***

A 965-foot-long flume was completed in 1891 connecting the west branch of Laguna Creek, colloquially known as Reggiardo Creek, to the main Laguna Creek by emptying out water to the north of the Laguna Creek Dam. The new flume was intended to help supplement the municipal supply from Laguna Creek, as the year-old Laguna Creek Dam was quickly inundated with sediment and less water than expected was being captured by the system overall (Santa Cruz Surf 1892: 2).

In 1912, R.S. Tait, the water superintendent, announced that a dam had been completed on Reggiardo Creek in order to aid in the supply of daily drinking water sourced from Laguna Creek. The level of Laguna Creek had been significantly reduced by a lack of rainfall in the watershed area, causing the supply of water in the impoundment to drop below sufficient levels to support the community (SC Evening News 1912: 2).

***High Street Distribution Reservoir (1904)***

In 1894, the City purchased a parcel of land located on the south side of High Street between present-day Laurent and Storey Streets for the construction of a Distribution Reservoir. The Cowell Reservoir was constructed to hold 60 million gallons, but it was carved into a porous limestone formation known as karst that caused approximately 1 million gallons of leakage daily. The Distribution Reservoir was intended to serve are a secondary reservoir for the Cowell Reservoir to preserve the water that was otherwise lost before it could be pumped into the distribution system (Santa Cruz County Assessor 1894; SCMU 2016: 1).

The site for the Distribution Reservoir overlapped Dodero Spring Creek (then called Meyrick Brook) and provided the added benefit of impounding a percentage of the water from this source while temporarily storing the water impounded from the City Water Works on Laguna and Reggiardo Creeks.

The survey and specifications for the new reservoir were completed in 1895 and the Santa Cruz Sentinel reported that the reservoir would have a capacity of 2.5 million gallons and cover three-quarters of an acre. Construction on the reservoir began in 1904 and it was completed later that year (Santa Cruz Sentinel 1895: 3, 1903: 4, 1904: 3).

***Liddell Spring Diversion (1913)***

Discussions about securing the title to Liddell Spring and utilizing it as a source of municipal water were gathering support in the City government beginning early in 1913. By July 1913, a pipeline between Liddell Spring and the main municipal pipeline from Laguna Creek was operational, and, at a rate of 590,000 gallons per day, was out-producing all the other existing municipal water sources (SC Evening News 1913a: 1).

***Crossing Street Pump Station (1913)***

In 1913, a new well was drilled on the San Lorenzo River at Crossing Street, just north of the present intersection of Highway 1 with the river. It was equipped by a 75-horsepower, 5-inch, three-step centrifugal pump that was installed by the United Iron Works. The pump was capable of pumping 500 gallons per minute and cost $1844 dollars at the time of installation (SC Evening News 1913b: 1).

***Acquisition of the Santa Cruz Water Company System (1913–1916)***

Fredrick Hihn passed away in 1913 and his ownership of the Santa Cruz Water Company passed to his children. The City seized the opportunity to acquire the Santa Cruz Water Company system, and in 1916 assumed full legal ownership of the entire system, which included right to water being drawn from Branciforte Creek, Carbenaro Creek, Majors Creek, and the San Lorenzo River (SCWD n.d.: 2; Monterey American 1913: 7; SC Evening News 1914: 1).

**Interwar Water Development in Santa Cruz (1918–1939)**

Water development during the early twentieth century interwar period in Santa Cruz was dominated by publicly funded projects. As the population increased in the eastern, mid-county areas such as Live Oak, small, private for-profit systems developed beginning in the 1930s to meet the increased demand in these neighborhoods that were otherwise unserved by the existing Santa Cruz infrastructure.

**Public Development (1918–1939)**

Public development during this period was predominantly focused on the repair and upgrade of existing system components. Although upgrades and additions were added to the several major facilities to increase the ability to store and improve the overall quality of municipal water during this period, with projects such as the Bay Street Reservoir in 1924 and the New Crossing Street Pumping Plant in 1929, the output was not widely increased between 1917 and 1930. Service began expanding into the areas to the east outside of the City with focused initiatives like the East Side Water Extension during this period (Brown and Dunlap 1956: 1-2).

***The Bay Street Reservoir (1924)***

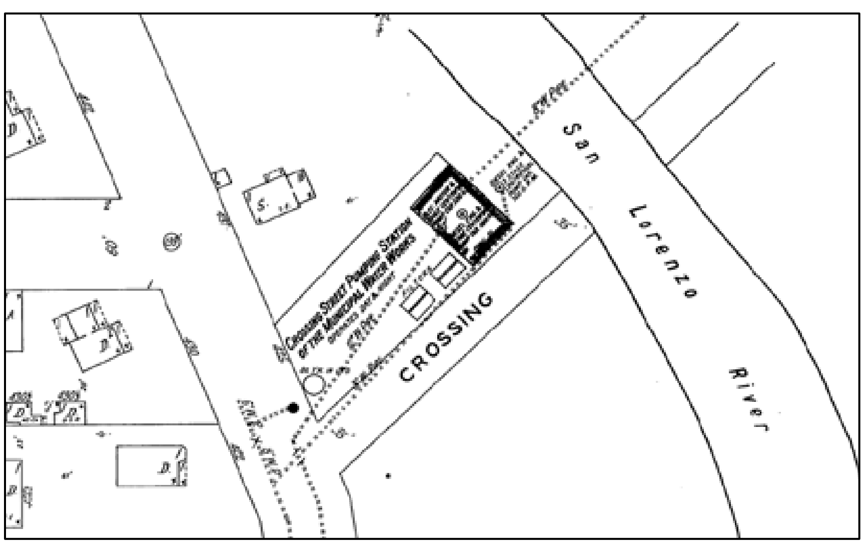
The Bay Street reservoir was completed in 1924 and was located 1 mile southeast of the Cowell Street Reservoir on a site to the east from the present intersection of Bay and Meder Streets (Exhibit 9). The 35-million-gallon capacity open-air tank was built to replace the Cowell Street reservoir. The Bay Street reservoir was constructed of stone and lined with concrete and was intended to be much more capable of reserving water accumulated from the surface stream sources for use during the dry summer and fall months (SCMU 2016: 1).

**Exhibit 9.** Construction of the Bay Street Reservoir in 1924 (SCPL 1924).

***Crossing Street Pumping Plant (1929)***

In 1929, the City completed a new, modern pumping plant on the Lorenzo River on the southern side of Crossing Street across from the 1913 Crossing Street Pumping Plant site (Exhibit 10). Once complete, the plant went by the same name as its predecessor until it eventually was known simply as the Municipal Pumping Plant. Today, it is called the Coast Pump Station.

The new facility was designed by City engineer Roy Fowler and consisted of a pumping plant capable of producing 6 million gallons of potable water in a 24-hour period from the San Lorenzo River. The plant operated with the help of "diesel engines, pumps, motors, generators, and all other necessary auxiliary equipment" (SC Evening News 1928: 8). The plant also treated the water with chlorine, making it safer to drink (SCWD n.d.: 3; Brown and Dunlap 1956: 1; SC Evening News 1928: 8, 1929: 7).



# CONTINUATION SHEET

Property Name: _ Beltz 8 Aquifer Storage and Recovery Facility ___________________________



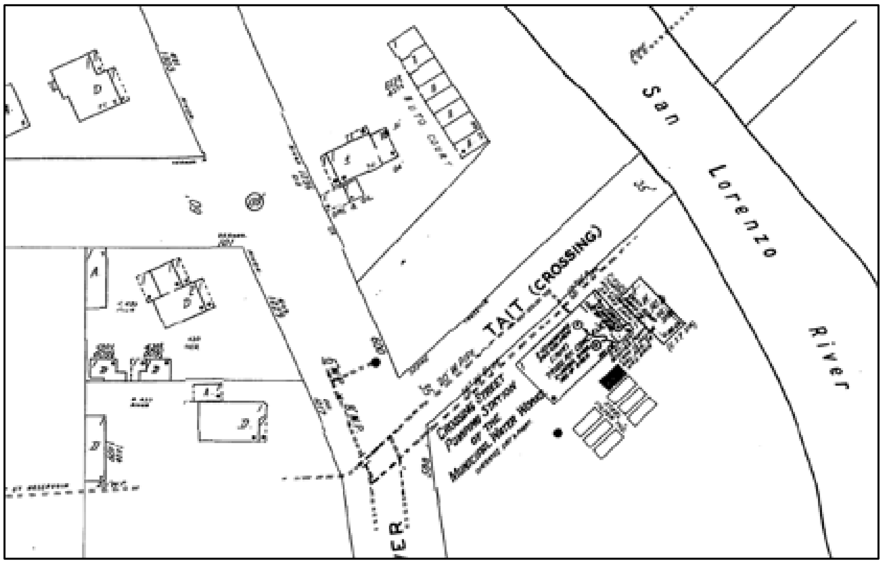



**Exhibit 10.** Comparison of the 1928 Sanborn Map (top) showing the old Crossing Street Pumping Plant and the 1928-1950 Sanborn Map showing the new facility completed in 1929 in approximately 1945 (Sanborn Map Company 1928: 103, 1928-1950: 103)

The low rainfall in winter 1931 prompted the City to drill four more wells at the site of the Crossing Street Pumping Plant. One of the wells was located at the site of the pumping plant on the west side of the river, while the remaining three were drilled on the east bank. This increased the output of the municipal water supply greatly, and allowed for expansion into other parts of the City. In 1934, the City boasted in the *Santa Cruz Sentinel* that 63.4 million gallons of water had earned the City a profit of $11,119 during April 1934 (Brown and Dunlap 1956: 14; SC Evening News 1931: 5, 1934b: 7).

In 1945, Crossing Street was renamed Tait Street for Water Superintendent R.S. Tait. A photograph of the Municipal Pumping Plant included in the 1956 investigative report into the Santa Cruz area water supply projects by engineers Brown and Dunlap demonstrates how the plant appeared during this period (Exhibit 11) (Santa Cruz Sentinel 1945: 8).


SANTA CRUZ MUNICIPAL PUMPING PLANT. Building houses low and high lift pumps and engine-driven generators. Pressure type filters are at right of building.

**Exhibit 11.** The Municipal Pumping Plant as it appeared in 1956 (Brown and Dunlap 1956: 18).

***East Side City Water Extension (1934)***

In 1934, work began on what was known as the East Side Water Extension, to extend the municipal water service into the Seabright and Live Oak areas of Santa Cruz via a new pipeline. Santa Cruz East Side residents C. W. Raisch, E. Brandt, George Ellison, Edith H. Evans, and Nathan Menderson donated the private property to the City needed for a right-of-way, and the pipeline extended from the municipal system to the areas of the City located on the east side of the San Lorenzo River. Additionally, two 1,000,000-gallon tanks were placed in De Laveaga Park in the north of the City as a reservoir for this branch of the system (Santa Cruz Sentinel 1933: 7, 1934c: 9).

**Private Development (1936–1939)**

In areas of the county that were not serviced by the municipal system, private systems such as the Beltz system were developed by residents to provide water for other residents of the area.

***Beltz Water Company (1936)***

In 1936, the County granted Iowa native, Charles Lemar Beltz, the rights to begin operating a private water system in the area of the County roughly bounded by Capitola Road to the north, Rodeo Gulch and Corcoran’s Lagoon to the west, the bay to the south, and 41st Avenue to the east. The ambitious service area of the Beltz system covered approximately 25% of the Live Oaks district with water sourced from ground wells located throughout the district and conveyed through pipelines situated beside Live Oak roads (Santa Cruz Sentinel 1936a: 2, 1936b: 8, 1947: 1).

**Post-War Growth (1945–1984)**

Many of the post-war water projects in Santa Cruz can be characterized as repair of existing infrastructure and expansion of the overall water system to support rapid population growth. The years following World War II provoked westward migration and an increase in birth rates, causing the population of California to increase from 6.95 million to 10.65 million between 1940 and 1950. In Santa Cruz, the growth of the community from 27,430 to 41,680 between 1940 and 1950 caused the common seasonal water shortages during dry months to become problematic in regards to growth and potential for community expansion (SCPL n.d.: 1).

In 1945, the state recognized a water shortage in Santa Cruz and authorized an investigation of available water resources. In 1946, the acute nature of the water crisis prompted the community to request a survey to determine an inventory of the available groundwater supply and plan for growth in the future. Completed In 1948, the survey determined that although the San Lorenzo pumping plant was running at full capacity, 24 hours per day during the dry summer of 1947, the river was so low that the entire run was being diverted through the pumps and into the City mains for consumption (SWRB 1953: 57; Brown and Dunlap 1956: 1–2).

Prompted by these concerns, in 1953, the State Water Resources Board released a report that inventoried available surface and underground water sources in the County and projected increased water utilization that exceeded the available water in Pajaro Valley, the Soquel Creek area, and the coastal area around and including Santa Cruz. The report identified requirements for supplemental water for Santa Cruz and areas served by the City of Santa Cruz Water Department (SWRB 1953: 57).

The County formed the Santa Cruz County Flood Control and Water Conservation district in 1955 and hired Creegan & D'Angelo Civil Engineers in 1956 to complete an extensive survey identifying dam sites, groundwater sources, and additional steps to improve control of the water supply throughout the County to compete with the City's proposals. The report asserted that population growth was a major concern for the water supply in the City because "the City of Santa Cruz has current water requirements which equal the capacity of the existing water supply system during a relatively dry era. Should an exceptionally dry season be experienced, there would be a serious water shortage in the City of Santa Cruz" (Creegan and D'Angelo 1957: 8).

Present supplies were determined to be insufficient for standard rates of population growth, including years that rainfall was considered more plentiful. Despite the rate of water consumption in the service area tripling between the mid-1930s and mid-1950s, there had been no additions to the municipal water supply during that time. Creegan & D'Angelo would also serve as the engineers for the Santa Cruz County Flood Control and Water Conservation District Advisory Committee, and ultimately, their recommendation to the council to remedy the current water crisis in the City was a dam on Newell Creek (Santa Cruz Sentinel 1953: 1, 1954: 1, 1958a: 4).

**Public Development (1945–1984)**

During the post-war era, a number of general obligation and revenue bonds helped to fund a wide range of water-related projects in Santa Cruz, including routine maintenance and transmission line replacements, but also projects such as the Newell Creek Dam and the Graham Hill Treatment Plant. The need for these projects was driven by the need for more water to support a growing, post-war population, but the use of bonds allowed for flexibility to project for future growth. In 1974, the *Santa Cruz Sentinel* surmised that "successful bond issues in 1958, 1963 and in 1967 reflected public confidence in the water administration and a recognition of the needs for more water, apparently, for there was relatively little difficulty getting approval" (Santa Cruz Sentinel 1974: 1–2).

***Construction of Newell Creek Dam (1960, modified in 1985)***

As a surface water storage on Newell Creek became a distinct reality following the recommendations of Creegan and D'Angelo, City Water Department Director, Weston Webber, voiced his support for the project in 1957. Ultimately, of the five proposed dams, only the Newell Creek Dam would come to fruition (Santa Cruz Sentinel 1957a: 1, 1957b: 13, 1957c: 12).

In 1958, the University of California Regents announced that they were considering the Cowell Ranch in the City of Santa Cruz as the site of a future University of California Campus. The City would be required to provide services and facilities for the prospective University community, which early figures suggested was to include around 2,500 students. In anticipation of the Water Revenue Bond Election in November 1958 to approve the bonds necessary to construct the Newell Creek Dam, a new water treatment plant, and pipelines to transport the water, the Santa Cruz Sentinel published an article outlining the impact of the proposed bonds. In reference to the speculative University in the City, the closing paragraph of the article states that "University officials know that the present water supply of Santa Cruz is inadequate, even for normal needs. Failure to correct this situation could end all chance of the selection of Santa Cruz as the University site." (Santa Cruz Sentinel 1958b: 1, 1961c: 1, 1961e: 1).

On November 5, 1958, the voters of the City of Santa Cruz approved $5.5 million in water revenue bonds necessary for the City to purchase 2,162 acres of land in the Newell Creek watershed from the San Lorenzo Valley Water District and build a dam on the site. Creegan & D'Angelo designed the earthfill dam (SCWD n.d.: 2; Santa Cruz Sentinel 1958a: 4).

Contractors Williams and Burrows Inc. of Belmont, California, began the construction of the Newell Creek Dam and preparation for the creation of Loch Lomond in 1960. The early stages of planning and execution were made more difficult by the narrow valley, allowing only one road for ingress and egress for equipment and supplies. The construction of the 195-foot-tall earthfill dam began with a "grout curtain" that pushed concrete 100 feet into the bedrock to fill any fissures or imperfections, ensuring a structurally sound base. The height and width of the dam's crest was first determined by the reinforced concrete ends. The embankment was then built up using successive layers of random fill from the immediate area, compacted with sheepsfoot tampers above and around the 300 feet of impervious material at the core of the embankment. Four construction personnel lost their lives in October 1960 during the layered construction of the embankment. A brass plaque commemorating these men was commissioned and remains today on the southwest elevation of the Control House (Santa Cruz Sentinel 1960a: 15, 1960b, 1).

The Newell Creek Dam was completed and filling steadily with water by 1961; however, the recreation area on the resulting reservoir was yet to be built. Keeping with the Scottish naming tradition started by Scotsman John Burns when he christened the mountain Ben Lomond in the 1850s, the reservoir was dedicated Loch Lomond during two days of festivities on July 27 and 28, 1963 (Santa Cruz Sentinel 1963: 1).

By 1964, the City distributed a notice to bid on the construction of the Loch Lomond Recreation Development. With the help of a $149,000 state grant, the Loch Lomond Recreation Area was completed by the spring of 1965. It included picnic areas, a concessions building, parking areas, two docks, and a boat launch. An all-weather road leading from Lompico to the Recreation Area was a crucial improvement constructed during this phase of the Project. It allowed visitors to experience the new recreation activities available at Loch Lomond, while simultaneously comprehending the realities of water storage and use in the county (Santa Cruz Sentinel 1964a: 3).

During the early 1980s, a survey completed by the Division of Safety of Dams demonstrated that the spillway at Newell Creek Dam did not meet the newest safety criteria for probable maximum flood conditions. A portion of the 1984 funds allocated for modifications and upgrades to the municipal system for were apportioned toward the upgrade of the dam's spillway wall. The upgrades were implemented in 1985, and included heightening the Newell Creek Dam spillway wall and the installation of a permanent aerator system (SCWD n.d.: 2; Santa Cruz Sentinel 1984: 3).

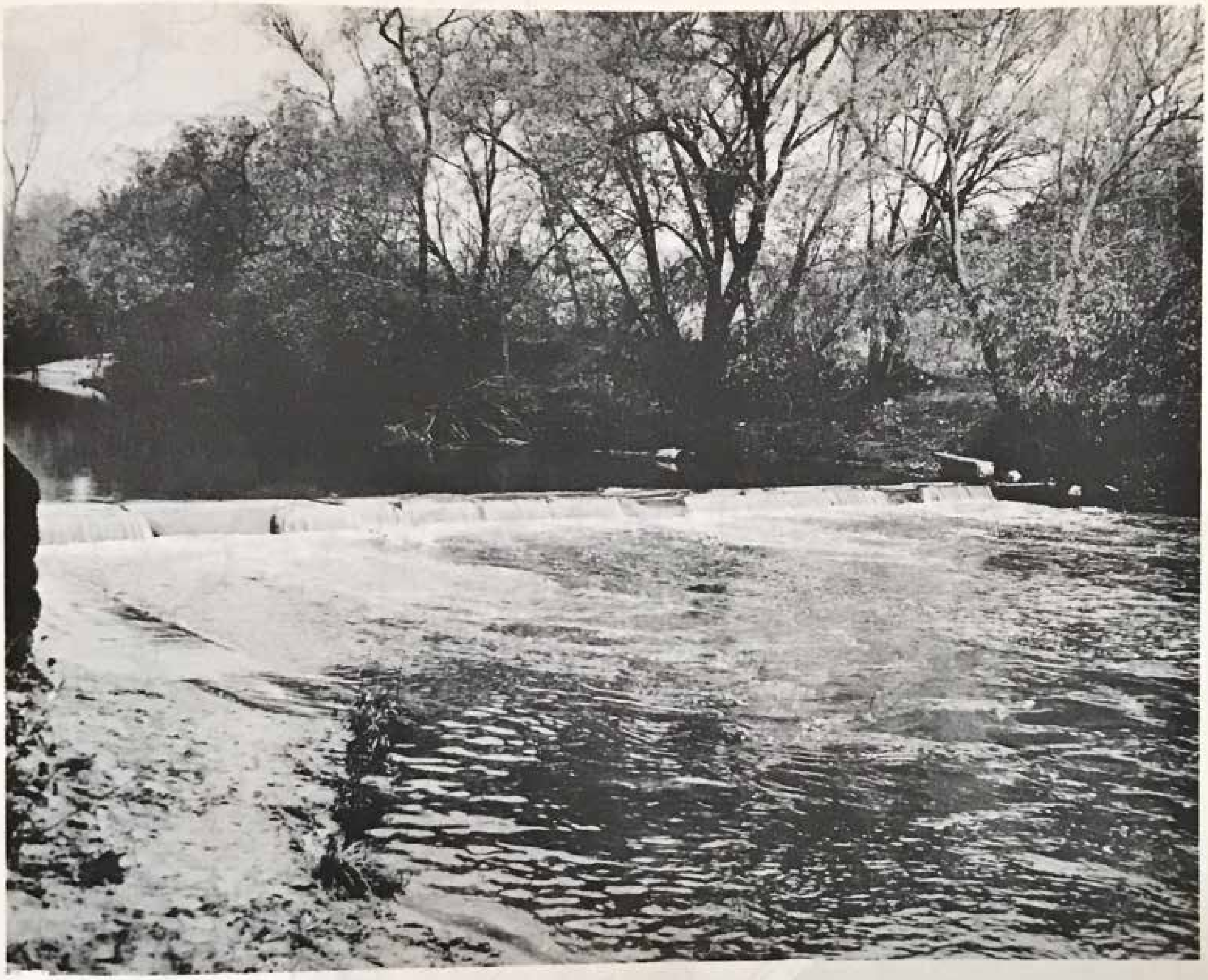
***Graham Hill Water Treatment Plant (1960, Upgraded in 1987)***

The Graham Hill Water Treatment Plant was a water filtration and treatment facility completed in 1961 and located beside Graham Hill Road. It was planned and completed during the same period as the Newell Creek Dam and also funded by the same water revenue bonds that helped to build the dam. The plant was designed with a capacity to treat 12-million gallons of water per day. Water derived from the coastal watersheds including Laguna Creek, Reggiardo Creek, Liddell Spring and Majors Creek is transported through a blend of gravity and pumping to the Graham Hill Water Treatment Plant to be filtered and treated before distribution as drinking water (SCWD n.d.: 3; SCMU 2016: 1; Santa Cruz Sentinel 1961d: 16).

The Graham Hill Treatment Plant was upgraded and enhanced in 1987 following a push for major upgrades throughout the municipal system beginning in 1984 (See section 1.4.1.5 Infrastructure Upgrades (1984) for more information) (SCMU 2016: 1).

***Tait Street Diversion Intake (Added 1961, Reconfigured in 1983)***

The Tait Street Diversion, as it called today, is presently located just up river from the Coast Pump Station. Together, the combined Tait Street Diversion and Coast Pump Station facility continues to be one of the most important sources of water for the City. Surface diversion rights for the San Lorenzo River date back to 1924 at what is now the Coast Pump Station but was first known as the Crossing Street Pumping Plant and later the Municipal Pumping Plant (see sections 1.2.2.4 and 1.3.1.2). Accounts of a functional diversion across the river near the pumping plant date back to at least 1930s. A photograph included in the 1956 investigative report into Santa Cruz area water supply projects by engineers Brown and Dunlap included a photograph of the existing diversion on the site during this period (Exhibit 12).



SANTA CRUZ DIVERSION DAM on the San Lorenzo River. Approximately one-half of the water used by the city is obtained from this source.

**Exhibit 12.** Existing diversion dam across the San Lorenzo River in 1956 (Brown and Dunlap 1956: 15)

By 1960 when the large-scale modernization campaign across the City was in progress, a design for a new intake structure on the existing pumping plant diversion dam was also planned. The new intake integrated the existing dam (age unknown) into the design for a new, modern intake located on the east bank of the river that was complete with a spillway fish ladder and new 20″ and 24″ transmission pipelines (Santa Cruz Sentinel 1934a: 7; Brown and Caldwell 1960: 1).

In 1983, the intake was again redesigned. The new design relocated the intake from the east bank of the river to the west bank while simultaneously upgrading all electrical controls and switch gear and relocating it above flood levels (SCWD n.d.: 3; Dewante and Stowell 1983: 3).

***Felton Diversion Station (1976)***

The Felton Diversion was installed on the San Lorenzo River north of Henry Cowell State Park and completed in 1976. James M. Montgomery of Consulting Engineers Inc. designed the diversion structure and the contractors for the project were the Dan Captuo Company. The structure is comprised of a permanent concrete foundation spanning the river containing an inflatable rubber dam. The inflatable dam, or bladder, can be raised to maintain and impoundment for the diversion of water which is transported by pipeline to supplement storage at Loch Lomond. The inflatable dam can also be lowered to control the flow of water during a storm surge or other similar event. The structure also includes a fish-screened intake structure, a conventional sump and high-lift pump station, a fish ladder, and a controls building (JMM 1969: c-3, 1970: VII-2; Santa Cruz Sentinel 1976: 13).

***Infrastructure Upgrades (1984)***

In January of 1982, a powerful storm caused flooding throughout the Santa Cruz County. It was discovered that a main pipeline from Loch Lomond had burst and was leaking at an alarming rate. Although the damaged section of pipeline was relocated and repaired by the end of the year, the event renewed community attention to the potential for the aging components of the municipal system to require upfront repair and maintenance (Santa Cruz Sentinel 1982: 1, 8; Cardona and Associates 1982).

In 1984, the Santa Cruz Water Department received $11.7 million dollars through private Certificates of Participation in order to fund upgrades and modernizations to the water infrastructure system throughout the City. The upgrades were wide-spread and included the renovation and upgrade of the Graham Hill Water Treatment plant, the construction of a laboratory to monitor water quality, new storage tanks in the Rolling Wood service area, enlarging the capacity of the Beltz Water Treatment plant to 2-million gallons daily, and improvements to the Newell Creek Dam spillway (SCWD n.d.: 2; Santa Cruz Sentinel 1984: 3).

**Private Systems Acquisition (1967-1969)**

The City of Santa Cruz purchased several private water systems between 1967 and 1969, including the Beltz Water Company, the Rolling Woods Utilities Inc., and Pestana Water Systems. These companies and their service infrastructure were all located in areas of Santa Cruz that had been only recently come into the City’s sphere of influence. The acquisition of these systems allowed the City to organize reliable water distribution services to areas such as Live Oak (SCMU 2016: 2)

***Beltz Water Company Acquisition (1967)***

Charles Beltz passed away in 1947 and left the operation of the Beltz Water Company to his only son, Chester Beltz. Under the supervision of his son, the company developed a both a wider, and more dense service area in response to the massive post-war population growth in the County. To accommodate the overall population growth of the County from 45,057 residents in 1940 to 120,882 residents in 1970, many of the larger agricultural properties and larger estates within the Beltz service area in Live Oak were subdivided to accommodate new, residential development. By 1955, the Beltz Water Company system included six source wells that allowed the system to accommodate incremental growth from 900 customers in 1955 to approximately 1,500 customers by 1967 (Santa Cruz Sentinel 1947: 1, 1955: 18, 1967a: 4, 1967b: 5, 1967c: 24; SCPL n.d.: 1; UCSB 2020).

The Beltz Water company entered into negotiations with the City of Santa Cruz beginning in 1965 to set a price for the purchase of the Beltz system. When the City of Santa Cruz finally purchased the Beltz Water Company System in 1967 for $245,000, the acquisition equipped the City with an additional source of groundwater from six existing wells (Exhibit 13). However, due to inadequate means to treat the high levels of iron and manganese in the Beltz well water, after the purchase, the wells were temporarily discontinued. Instead, the Beltz conveyance infrastructure was tied into the existing municipal system and customers began receiving water on July 1, 1967 (Santa Cruz Sentinel 1967a: 4, 1967b: 5, 1967c: 24).

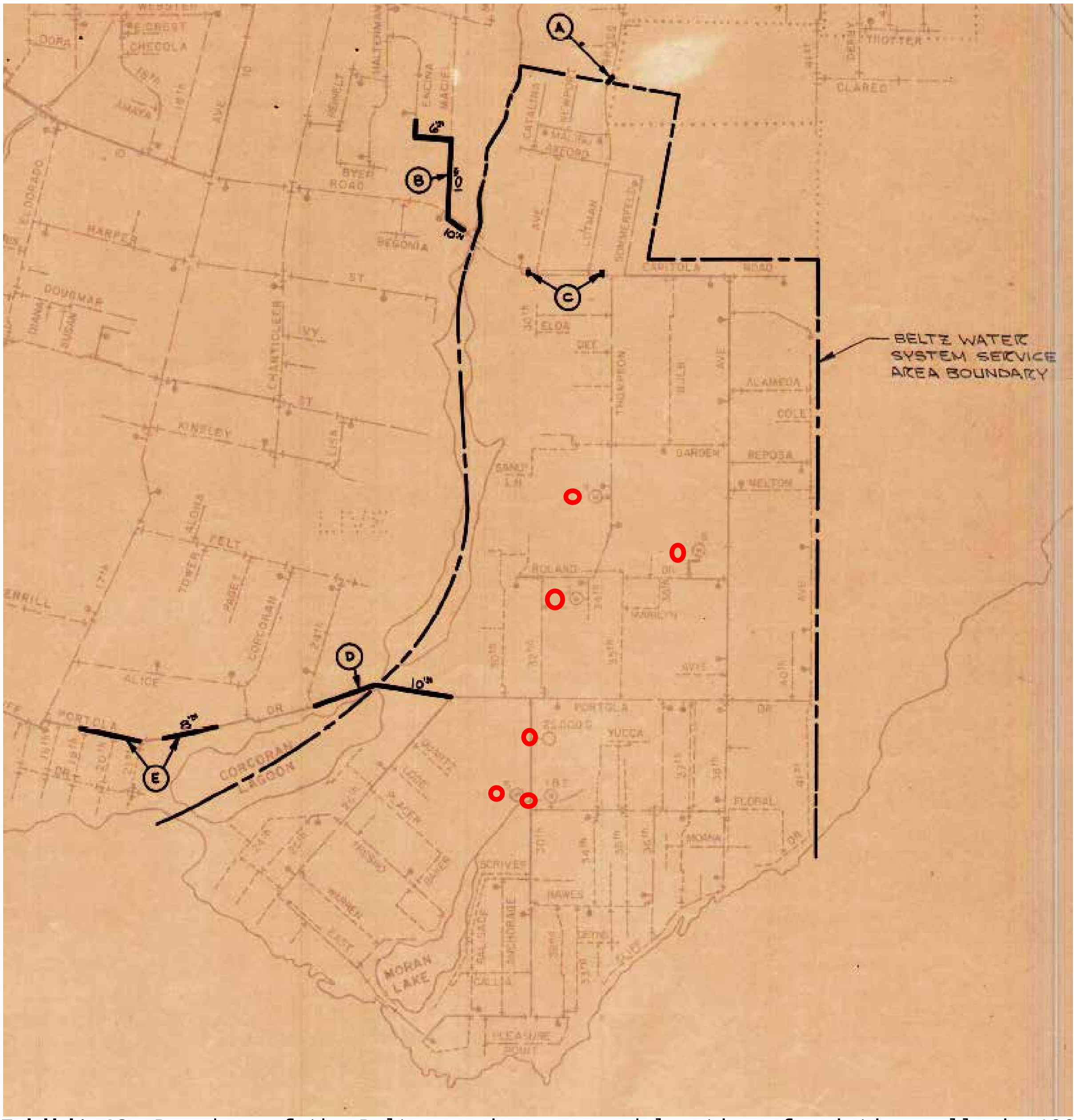



**Exhibit 13.** Boundary of the Beltz service area and location of existing wells in 1967 (circled in red). The letters show some of the tie-ins built by the Santa Cruz Water Department to utilize the Beltz infrastructure (SCWD 1967: D)

In 1972, an Iron and Manganese removal treatment plant was constructed at the site of well 6 located off Roland Avenue that allowed for the treatment of 1,000,000 gallons of water daily for use in the eastern section of the municipal system. In 1973, it was announced by Water Department director, Wes Webber, that the site containing well 6 would also receive a new well in anticipation of expansion of the new treatment plant when possible to increase the daily output of the Beltz system overall. This expansion of the plant took place in 1985 and was funded in part by the $11.7 million in funds allocated for major upgrades throughout the municipal system during the mid-1980s (Santa Cruz Sentinel 1973: 15; SCWD 1985: G-4).

***Pestana Water Company (Founded 1961, Acquired 1969)***

John Pestana founded the Pestana Water Company in 1961 to serve the modest Santa Cruz Gardens subdivision located in the hills north of Live Oak. Pestana, along with his brother, Ernie Pestana, were part owners of a sub developer from Santa Clara County responsible for the construction of the Santa Cruz Gardens subdivision in the early 1960s. In 1962, Chester Beltz, owner of the Beltz Water Company, was hired to operate the Pestana Water Company system (Santa Cruz Sentinel 1961a: 10, 1961b: 28, 1969a: 3).

The Pestana Water Company was sold to the City for $36,615 in November, 1969. The purchase of the three-well system added 243 customers to the municipal service system. The City immediately improved the pump operating the system, which was only capable of pumping 286 gallons per minute. In 1971, a pipeline was constructed to connect the Pestana system to the City main (Santa Cruz Sentinel 1969a: 3, 1969b: 4).

***Rolling Woods Utilities, Inc. (Founded 1963, Acquired 1969)***

Rolling Woods Utilities Inc. was formed in 1963 to serve the Rolling Woods subdivision located in the hills beside Graham Hill Road north of Pasatiempo. The City purchased the company in 1969, at which time the service area extended to 135 customers (Santa Cruz Sentinel 1969c: 13, 1969b: 4).

**NRHP/CRHR Statement of Significance**

**NRHP Criterion A: associated with events that have made a significant contribution to the broad patterns of our history**

**CRHR Criterion 1: is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.**

Water management infrastructure associated with water districts is a common property type throughout the County and the State of California. Components of water infrastructure systems have been considered significant under NRHP Criterion A and CRHR Criterion 1 when associated with trends and events that have made a significant contribution to the broad patterns of our history, particularly in regional agricultural or local economic development.

The Beltz system did not become a part of the Santa Cruz municipal water system until 1967; however, these structures constitute early- to mid-twentieth century additions to the system. While these types of systems may have influenced or supported the growth of communities such as Live Oak, this is far too common an association to merit a blanket conclusion of historical significance under NRHP Criterion A or CRHR Criterion 1 within the context of municipal water management systems. At some point in the past, all forms of historic-era infrastructure were associated locally or regionally with municipal growth or economic development, actual or intended. It is often exceedingly difficult to prove whether historic-era infrastructure associated with recognizable growth actually caused or merely accommodated the growth. Furthermore, although the Beltz system dates back to 1936 and was the pioneering water conveyance system in the area, historical aerial photographs suggest that the first well located on the Beltz 8 property, Beltz 6, was not developed until 1952 and 1967. This suggests that the Beltz 6 facility was not developed during the initial years of the Beltz system development in the 1930s, but rather, it was installed as an expansion to the existing system during the post-war period to meet increased demand for water within the service area as the population of the County swelled by roughly 240% between 1940 and 1970. Historical aerial photographs suggest that many of the small agricultural properties and large estates within the Beltz service area were subdivided to accommodate new, substantial residential development between 1952 and 1964, resulting in an increase from roughly 900 Beltz service connections in 1955 to 1,500 by 1967  As the Beltz system constituted the only water delivery system servicing the geographic area, the nearly 60% increase in the number of residential service connections between 1955 and 1967 suggests that the construction of Beltz 6 was directly related to  an increased demand for supply and to enable continued development within the service area (Santa Cruz Sentinel 1947: 1, 1955: 18, 1967a: 4, 1967b: 5, 1967c: 24; SCPL n.d.: 1; UCSB 2020).

Therefore, the Beltz Wells 8 facility is not associated with any extraordinary event or events occurring within the context of early County development that would distinguish the structures from the vast array of water management systems dotting the California landscape. Moreover, research into the history of the Beltz 8 ASR facility revealed no evidence suggesting that the structures on site are associated with an alternative, more unique event or pattern of events considered historically significant. For these reasons, the Beltz 8 ASR facility does not appear to meet NRHP Criterion A or CRHR Criterion 1.

**NRHP Criterion B: associated with the lives of significant persons in our past.**

**CRHR Criterion 2: is associated with the lives of persons important in our past.**

To be found eligible under Criterion B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research failed to indicate any such direct association between individuals that are known to be historic figures at the national, state, or local level and the Beltz Well 8 facility.

The Beltz Well 8 facility was subsequently modified after it was first constructed between 1952 and 1967 by several individuals and early regional water management developers in order to provide municipal water in the Santa Cruz region. As such, the facility represents the collective efforts of many individuals, rather than the work of any single individual. Therefore, the facility is not known to have any historical associations with people important to the nation’s or state’s past. Due to a lack of identified significant associations with important persons in history, the facility does not appear eligible under NRHP Criterion B or CRHR Criterion 2.

**NRHP Criterion C: embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.**

**CRHR Criterion 3: embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.**

The Beltz Well 8 property was established between 1952 and 1967 as the sixth well site in the Beltz Water system; however, subsequent additions to the site have resulted in the property not retaining any buildings or infrastructure from this initial period of construction under Beltz management. Major alterations to the site, including the construction of an Iron and Manganese Removal Plant in 1972 and the abandonment of Well 6, have altered the setting of the site and caused it to lose integrity of setting, feeling, and association. Subsequent alterations to the Removal Plant as a result of an expansion in 1985, including a large addition to the Control Building, have altered this phase of the site’s development, causing integrity in the areas of design, materials, and workmanship to be diminished. Additionally, the design for the facility lacks sufficient engineering distinction, does not appear to be distinctive or innovative in design, and the remaining features located on the site are distinctly utilitarian in design. They are also not representative of a known style aesthetic and do not possess high artistic values.

Overall the Beltz Well 8 facility has experienced multiple alterations over time in order to accommodate modern equipment and ensure ongoing use. It is representative of a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular well or treatment plant facility type. Consequently, the Beltz Well 8 appears to lack significance under NRHP Criterion C or CRHR Criterion 3.

**NRHP Criterion D: have yielded, or may be likely to yield, information important in history or prehistory.**

**CRHR Criterion 4: has yielded, or may be likely to yield, information important in prehistory or history.**

There is no evidence to indicate that the subject property is likely to yield any additional information important to prehistory or history beyond what is already known. The subject property is also not associated with an archaeological site or a known subsurface cultural component. Therefore, the subject property does not appear eligible under NRHP/CRHP Criterion D/4.

**County of Santa Cruz Statement of Significance**

**1. The resource is associated with a person of local, State or national historical significance.**

As stated in Criterion B/2, archival research did not reveal an association between the Beltz Well 8 and any persons who significantly contributed to the development of the city, state, or nation. Therefore, the facility does not appear eligible under County Criterion 1.

**2. The resource is associated with an historic event or thematic activity of local, State or national importance.**

The Beltz Wells 8 facility is not associated with any extraordinary event or events occurring within the context of early County development that would distinguish the structures from the vast array of water management systems dotting the California landscape. Moreover, research into the history of the Beltz Wells 8 facility revealed no evidence suggesting that the structures on site are associated with an alternative, more unique event or pattern of events considered historically significant. For these reasons, the Beltz Wells 8 facility does not appear to be directly associated with events that have made a significant contribution to the development of water infrastructure in the County. Therefore, the facility does not appear eligible under County Criterion 2.

**3. The resource is representative of a distinct architectural style and/or construction method of a particular historic period or way of life, or the resource represents the work of a master builder or architect or possesses high artistic values.**

As discussed in Criterion C/3, the Beltz Well 8 facility has experienced multiple alterations over time in order to accommodate modern equipment and ensure ongoing use. It is representative of a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular well or treatment plant facility type. Therefore, the facility does not appear eligible under County Criterion 3.

**4. The resource has yielded, or may likely yield, information important to history.**

As discussed under Criterion D/4, there is no evidence to indicate that the subject property is likely to yield any additional information important to prehistory or history beyond what is already known. The subject property is also not associated with an archaeological site or a known subsurface cultural component. Therefore, the facility does not appear eligible under County Criterion 4.

**Integrity Discussion**

In addition to not meeting any of the significance Criteria, the subject Beltz 8 Well lacks historic integrity. In the case of the Beltz Well 8 facility, the structures now located on the site are still located in their historic location, retain their historic alignment, and continue to provide water for the municipal water supply. However, the facility shows evidence of evolution over time to meet rising supply demands, including the addition on the Control Building, removal of a waste water treatment tank, and the replacement of the original Beltz 6 well on the site with a new well in 1998. As a result of this expansion, the facility has lost the integrity of setting, association, design, materials, and workmanship.

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**State of California C The Resources Agency**
**DEPARTMENT OF PARKS AND RECREATION**
# PRIMARY RECORD

Primary #
HRI #
Trinomial
**NRHP Status Code** 6Z

Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by recorder) Tait Diversion & Coast Pump Station Site

**P1. Other Identifier:**

***P2. Location: Not for Publication** n **Unrestricted**
***a. County** Santa Cruz **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Santa Cruz **Date** 1981 **T** 11S ; **R** 002W ; **Sec** 12 ; Mount Diablo **B.M.**
c. Address 1214 River Street City Santa Cruz Zip 95060
d. UTM: (Give more than one for large and/or linear resources) Zone 10S, 586205.45 mE/ 4094260.16 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)
A chain-link fence fitted with barbed wire and privacy slats along River Street secures the perimeter of the property and features a recessed gated entry to the paved access road. Assessor Parcel Number: 008-032-01.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Tait Diversion and Coast Pump Station is a combined facility located on municipal property within the City. The property demonstrates a layered development history.
***See Continuation Sheet**

***P3b. Resource Attributes:** (List attributes and codes) HP9. Public Utility Building; HP21. Dam
***P4.Resources Present:** n Building n Structure Object Site District Element of District Other (Isolates, etc.)
**P5b. Description of Photo:** (view, date, accession #) Entrance gate off of River Street, looking north (Google 2020)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

***P6. Date Constructed/Age and Source:** n Historic Prehistoric Both
1. Tait Diversion, c.1934 (Santa Cruz Sentinel 1934)
2. Coast Pump Station, 1929 (SC Evening News 1929)
3. Meter Shop, c.1964-1968 (NETR 2020)

***P7. Owner and Address:**
City of Santa Cruz
809 Center Street
Santa Cruz, CA 95060

***P8. Recorded by:** (Name, affiliation, and address) Fallin Steffen, MPS
Dudek
725 Front Street, Suite 400
Santa Cruz, CA 95060

***P9. Date Recorded:** May 6, 2020

***P10. Survey Type:** (Describe) Intensive Pedestrian

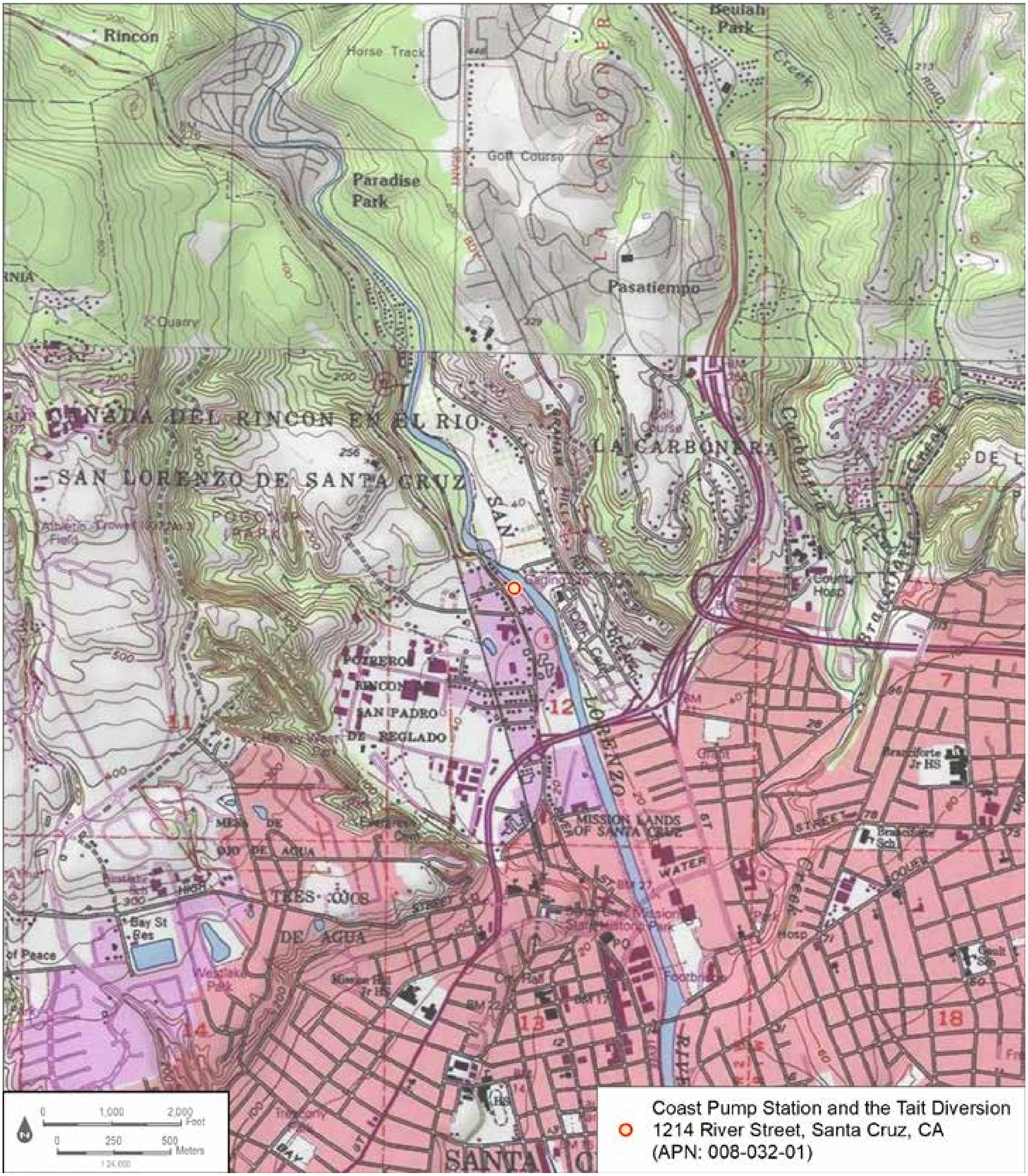
***P11. Report Citation**: (Cite survey report and other sources, or enter "none.") Dudek. 2020. *Cultural Resources Inventory and Evaluation Report for the Santa Cruz Water Rights Project.*

***Attachments:** NONE nLocation Map nContinuation Sheet nBuilding, Structure, and Object Record
Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record
Artifact Record Photograph Record Other (List):

| | |
|---|---|
| **State of California C Natural Resources Agency**<br>**DEPARTMENT OF PARKS AND RECREATION**<br>**LOCATION MAP** | Primary #<br>HRI#<br>Trinomial |

**Page** 2 **of** 31 ***Resource Name or #** (Assigned by recorder) Tait Diversion & Coast Pump Station Site

***Map Name:** Santa Cruz Quadrangle ***Scale:** 1: 24,000 ***Date of map:** 1981



# BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** (Assigned by recorder) Tait Diversion & Coast Pump Station Site

 ***NRHP Status Code** 6Z

B1. Historic Name: Crossing Street Pumping Plant

B2. Common Name: Tait Diversion & Coast Pump Station Site

B3. Original Use: Pumping Plant B4. Present Use: Pumping Plant

***B5. Architectural Style:**

***B6. Construction History:** (Construction date, alterations, and date of alterations)

The Tait Diversion and Coast Pump Station combined facility contains three associated built environment structures: the Coast Pump Station (1928), the Meter Shop (c.1964–1968), and Tait Diversion (c.1934).

***See Continuation Sheet**

***B7. Moved?** n **No** **Yes** **Unknown** **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Tait Diversion: Unknown; Coast Pump Station: Ray Fowler, City Engineer

b. Builder: Unknown

***B10. Significance:** **Theme** **Area**

**Period of Significance** **Property Type** **Applicable Criteria** N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Tait Diversion and Coast Pump Station do not appear eligible for listing in the NRHP, the CRHR, or on the City of Santa Cruz Historic Building Survey due to a lack of historical associations, architectural merit, and compromised integrity. As such, these properties do not appear to be historic properties under Section 106 of the NHPA or historical resources under CEQA.

***See Continuation Sheet**

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**

***See Continuation Sheet**

B13. Remarks:

***B14. Evaluator:** Fallin Steffen, MPS, for Dudek

***Date of Evaluation:** June 5, 2020

(This space reserved for official comments.)

***P3a. Description:**

**Coast Pump Station (1929)**
The Coast Pump Station is a rectangular, industrial-style building that features ribbed metal siding and a side-gable roof clad in corrugated metal (Exhibit 1). A square, shed-roof garage addition extends from the southwest elevation of the building and also features ribbed metal cladding and a corrugated roof.

Exhibit 1. The Coast Pump Station, southeast (main) elevation view looking northwest (IMG_0185).

The southeast (main) elevation features a narrow metal rollup door and a simple entry door with a single square window; the garage addition also features a wide rollup door on this elevation. Large pipes emerge from the ground on the northeast elevation and are sheltered by a shed roof extending from this elevation. The side and rear of the building do not have any additional doors and windows (Exhibit 2).

Exhibit 2. Rear of Coast Pump Station showing view looking northeast (IMG_0162).

Meter Shop (c.1964-1968)
The Meter Shop building is a rectangular, industrial-style building that features 'Stran-steel' brand ribbed metal siding and a front-gable roof clad in corrugated metal (Exhibit 3). The foundation

of the building is constructed from concrete masonry units. The southeast (main) elevation features a small loading dock, a narrow metal rollup door and a simple solid entry door. The entry door is accessed via a set of six side-facing steps fitted with a metal pipe railing. The northeast elevation features a single aluminum sliding window (Exhibit 4).

Exhibit 3. Meter Shop, southeast (main) elevation, view looking north (IMG_0181).

Exhibit 4. Meter Shop, northeast elevation, view looking west (IMG_0184)

**Tait Diversion (c.1934, new intake added 1983)**
The Tait Diversion is presently comprised of a weir across the San Lorenzo River formed from irregularly-shaped concrete sections arranged in a line that disappears into the thick vegetation on the opposite bank of the river (Exhibit 5 and 6). On the west bank of the river, a sizable

concrete intake installed in 1983 features a heavy metal grate over both the inflow and the outflow, and the top of the structure is covered by metal decking.

Exhibit 5. Tait Diversion, overview showing the 1983 intake in the foreground and the remaining section of the original concrete diversion dam stretching across the San Lorenzo, view looking north (IMG_0175).

Exhibit 6. Tait Diversion, remaining section of the original concrete diversion dam, view looking north (IMG_0165).

***B6. Construction History:**
The following alterations were identified during a review of the photographs taken during the pedestrian survey and during the course of archival research. Unless indicated, the dates of these alterations is unknown.

**Coast Pump Station** (1929)

20-foot by 30-foot garage addition, 1979 (SCWD 1979: 2)
Surge arrestor tank added behind rear of building (SCWD 1980: 1)
Filter tanks removed and site paved, between 1968 and 1979 (NETR 2020; SCWD 1979: 2)
Building clad in metal siding
Roof covered in corrugated metal sheets
Various mechanical, pump, and pipeline upgrades

**Meter Shop** (c.1964-1968)

Installation of new lights and security cameras on exterior of building

**Tait Diversion** (c.1934)

New intake structure on east bank, 1960 (Brown and Caldwell 1960)
New intake structure on west bank and notch existing dam, 1983 (Dewante and Stowell 1983: 3)

***B10. Significance:**

**Early Development of Water Management in Santa Cruz County**

The following context discusses the development of the SCWD, which provides municipal water to residents of the City and surrounding areas within the County. The SCWD water system serves approximately 23,700 residential, commercial, industrial, municipal, and irrigation accounts within approximately 30 square miles, encompassing the entire City and select contiguous County areas (EKI 2011: 9).

Several miles north of the evolving city center at the base of the Santa Cruz Mountains, multiple mountain streams and tributaries carve deep channels and valleys through the dense redwood and oak timberlands. The extensive virgin forests and the rich underground deposits of lime in the Santa Cruz Mountains attracted opportunistic settlers and purveyors in the mid- to late-1800s who sought to harness the power of the mountain streams to move the goods located in the remote area to market (Hoover et al. 2002: 456).

The California Gold Rush of 1848 accelerated the desirability of land across the state, and before long, access to water in the drought-prone region took on the highest level of importance. Instead of adopting an equal water access structure in the fashion of the eastern United States, the wealth potential of waterways during the Gold Rush shaped California water law into a “first in time, first in right” system known as Prior Appropriation. Under this system, riparian rights were granted to the first person to use a river or tributary for beneficial consumption like mining, farming, milling, or as-needed domestic use. When land in the Santa Cruz Mountains was subdivided and sold, access to the rivers and streams was enormously important. Not only did it mean that the initial use set out for a waterway was the primary use, it also meant that any subsequent uses could not supersede or negatively affect the chief use. The order that claims were recognized during this period established the foundation of the complicated system of water allocation rights still in use today in the County (Pisani 1984: 246–247).

Many of these powerful mountain streams and tributaries were utilized by early landowners and tenant entrepreneurs to make a profit from the natural resources that formed the early economic basis of the County. Several of these mountain creeks still bear the names of the first men who established mills or permanently settled beside them. Majors Creek was named for Joseph L. Majors who established a grist mill on the creek prior to serving as the County Treasurer between 1850 and 1853. Liddell Creek was named for George Liddell who moved to the Santa Cruz Mountains and established a sawmill on the creek in 1851. Newell Creek was named for Addison Newell who established a farm in the steep, v-shaped valley on the banks of the creek in 1867 (Koch 1973: 33–34; Clark 2008: 174, 187, 215).

For others, the streams presented pure economic opportunity. The first power sawmill in California was built on Rancho Zayante by Isaac Graham in the 1842 and was driven by the waters of Zayante Creek. Isaac E. Davis and Albion P. Jordan of the Davis and Jordan Lime Company purchased a portion of Rancho Cañada del Rincon in 1853 as a promising quarry site. They also utilized the falling water on the property to process local lumber into fuel for their many kilns. The California Powder Works was established in 1865 on the bank of the San Lorenzo River on a portion of Rancho Carbonera. The Powder Works used the river to grind raw materials used in the production of the first smokeless powder manufactured on the west coast of the United States. By 1868, there were a sizable number of business and industries that relied on water from County waterways to operate, including 12 water-powered lumber mills, 10 steam-powered lumber mills, and 9 shingle mills in operation within the County (Clark 2008: 130–131; Hoover et al. 2005: 456; Koch 1973: 36–37; Brown 2011: 4).

As water management techniques were being applied to a variety of industry in the County, the successful technologies developed and used in early natural resource harvesting such as flumes and pumps prompted local residents in Santa Cruz to consider why these were not being put to use for the benefit of drinking water. Furthermore, the up-stream uses of many of these industries that had developed along streams in the Santa Cruz Mountains had resulted in a less than desirable water quality downstream.

## Early Water Development in Santa Cruz City (1864–1917)

### Private Development (1864–1916)

Beginning in the 1860s, acute cyclical water shortages and pollution prompted the development of several for-profit water systems in Santa Cruz. By the end of the 1880s, the two surviving major water companies, F.A. Hihn Water Works and the Santa Cruz Water Company, were joined into a single private business that competed with the new municipal water system that began in 1890 for almost three decades before being purchased by the City and integrated into the municipal system in 1916.

#### *F.A. Hihn Water Works (1864)*

In 1864, prompted by the issue of shortage, young entrepreneurs Elihu Anthony and Fredrick A. Hihn implored the Board of County Supervisors to allow them to dig trenches and lay redwood pipes to transport water throughout Santa Cruz. The “wooden tubes” were chosen as an inexpensive alternative to iron pipes (Santa Cruz Weekly Sentinel 1864a: 2). The source of the water was an 8,000-gallon reservoir on Anthony’s property supplied by water from Scott’s Creek, and eager recipients of the water could gain access for a fee. (Brown 2011: 1–2; Santa Cruz Weekly Sentinel 1864: 2).

By 1876, the 1864 system was known as the F.A. Hihn Water Works, and it was the largest provider of water in the newly chartered City, with Dodero and Carbonero Creeks constituting its primary sources. The company predated the incorporation of Santa Cruz by 2 years (Koch 1973: 35; Brown and Dunlap 1956: 14; City of Santa Cruz 2020).

#### *The Santa Cruz Water Company (1866)*

In 1866 a new, fee-based, private water supply company was founded to share in the lucrative profits of the F.A. Hihn Water Works. A man named E. Morgan acquired rights to the waters of the San Lorenzo River in 1866, just prior to the town of Santa Cruz being officially incorporated later that year. He used these rights to install a section of pipework conveying water to the area known then as the “The Flats,” which comprises the modern area of Pacific Avenue and Front Street (SCWD n.d.: 1).

In 1876, Morgan sold his system to a wealthy man from San Francisco named H.K. Lowe. Under Lowe’s guidance, the Santa Cruz Water Company incorporated in July 1876 and began construction on a pumping station on the San Lorenzo River approximately 1 mile upstream from the City, as well as a new reservoir located on High Street. Morgan retained 50 company shares and became the resident engineer and superintendent of the Santa Cruz Water Company. By the end of 1876, the company had also installed a Branciforte Creek diversion to deliver water via a pipeline to a new reservoir located at the base of School Street. As the City continued to grow and the steam-powered pumping plant installed on the San Lorenzo River became the source of repeated water-quality concerns, the Santa Cruz Water company acquired partial water appropriation rights to the Majors ( then called Cojo Creek) in 1881. After the acquisition, the company scrapped the whole San Lorenzo pumping plant for $800 (Santa Cruz Weekly Sentinel 1877a: 1; 1877b: 2; SCWD n.d.: 1).

For the next several years, the Santa Cruz Water Company focused its attention on the construction of a pipeline to divert water from Majors Creek. This effort was very costly and the company slipped into dire financial condition. In August 1886, the company along with all of its appurtenances was sold to the City, financed through the sale of bonds from the Bank of Santa Cruz and the Anglo-Californian Bank. Hihn bitterly opposed the issuance of the bonds and contested their legality in court. The matter reached the Supreme Court and the election in favor of the bonds was declared invalid in 1887. By this time however, the City had already operated the water system for over a year when it was re-conveyed to private owners in 1887 (Santa Cruz Weekly Sentinel 1882: 3; SCWD n.d.: 1; Santa Cruz Surf 1890a: 1).

The City voted again in March 1888 to put up the bonds necessary to purchase the Santa Cruz Water Company system from the private owners. However, while the City was in the process of securing the bonds for the purchase, the Santa Cruz Water Company system was covertly sold to F.A. Hihn in a private, backroom transaction before the City could obtain legal ownership. Hihn quickly consolidated the Santa Cruz Water Company system with his own system of works. This transaction effectively severed any opportunity the City had of acquiring an established water works system with which to launch their own public water system (Santa Cruz Daily Surf 1888a: 3, 1888b: 2; Santa Cruz Surf 1890a: 1).

F.A. Hihn continued to operate the consolidated system as the Santa Cruz Water Company and expanded the service area east into the Seabright neighborhood until his death in 1913 (SCWD n.d.: 1).

**Public Development (1890–1917)**

During the 1880s, the rising price of these fee-based water systems like the F.A. Hihn Water Works and the Santa Cruz Water Company prompted the City to explore their own, city-owned, public water option. After several disappointing attempts to acquire an existing system of water works, the City revised its approach and began planning to build a diversion system and storage reservoir from the ground up, prompting the development of the first municipal water project in Santa Cruz, the Laguna Creek Dam and the Cowell Reservoir. This project led the way for other ambitious water system development in the City including several other north coast stream diversions and the first pumping plant on the San Lorenzo River. In 1916, the City acquired the rights to the Santa Cruz Water Company and began to tie in the systems as one, forming the basis of the modern SCWD system used today.

***The Laguna Creek Dam and the Cowell Reservoir (1890)***

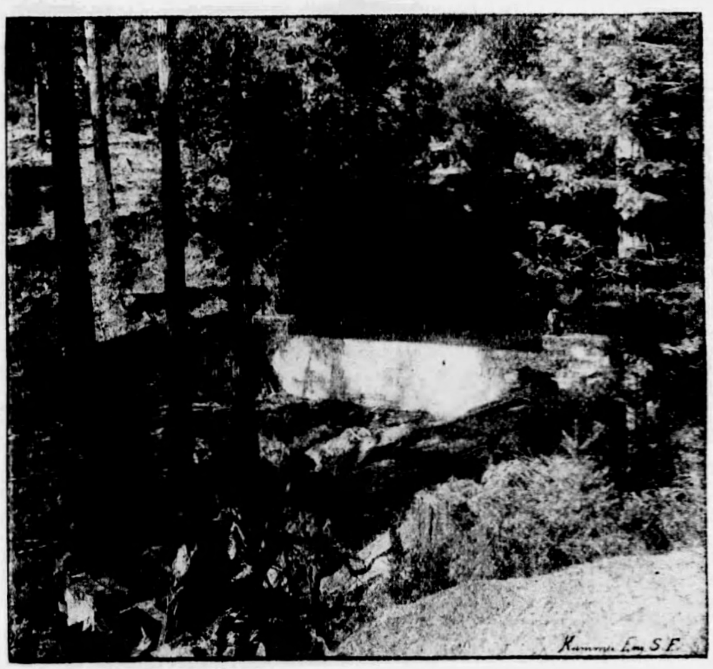
In July 1888, the Common Council secured the water rights to the Laguna Creek. “The Laguna,” the *Santa Cruz Sentinel* reported, “is a rushing, roaring mountain stream, entirely rock bound and tree shaded above the falls where it is proposed to take the water out (Santa Cruz Sentinel 1888: 2).” The stream was capable of supplying 1.4 million gallons towards a City-owned water works. Plans were finally in motion for the construction of the first city-owned water works, supplied through a new pipeline by the waters of Laguna Creek, with reserve storage in a new City reservoir on Henry Cowell’s ranch property known as the Cowell Street Reservoir, which was located roughly at the present site of the U.C. Santa Cruz Arboretum. The *Santa Cruz Surf* reported with excitement that the new project would mean open, municipal water so that each citizen of Santa Cruz could finally “quench his thirst with free water without ‘dropping a nickel in the slot’” (Santa Cruz Surf 1890a: 1).

The bonds required to fund the construction of the City water works were secured within the following year, and in July 1889, a civil engineer named G.S. Schussler issues a report in favor of the project that valued the proposed undertaking at $260K (Santa Cruz Surf 1889a: 3, 1889b: 3).

The prominent San Francisco firm Risdon Iron Works was selected as the contractor, who were known for producing the great iron pipes for steam ships. The *Santa Cruz Surf* reported that work on the dam on Laguna Creek and the dam at the reservoir site would be completed by the San Francisco contracting firm Kelso and Dare (Santa Cruz Surf 1889c: 3).

On September 30, 1890, the *Santa Cruz Surf* reported that the reservoir and the pipeline of the City water works were nearly complete. The article published an in-depth description of the new Laguna Creek Dam (Exhibit 7), stating that (Santa Cruz Surf 1890b: 3):

> The dam across Laguna Creek just above the Henneuse place is one of the finest pieces of rubble stone work in the county and not to be excelled anywhere. The granite rocks used in its construction were taken from the bed of the creek, some of them weighing as much as two tons. The water will first be diverted from the Laguna at this point into a flume 3x4 feet and one hundred feet in length, also built of solid masonry. This is nearly level and terminates in a basin two feet lower, and into which the sand and sediment which may be carried in the water in a time of storm will settle. Gates are provided by means of which this basin can be cleared as often as required. From here the water will enter the 14-inch main through which it will be carried to the storage reservoir. This pipe follows the canyon of the Laguna creek as nearly as possible to the county road a distance of about three miles.



THE RETAINING DAM ON LAGUNA CREEK.

**Exhibit 7.** The earliest known photograph of the Laguna Creek Masonry Dam published in the Santa Cruz Surf in 1892 (Santa Cruz Surf 1892: 2).

On October 18, 1890, the last pipe connecting the Laguna Creek to the new Cowell Street Reservoir was put into position (Exhibit 8). The pipeline emptied into the reservoir for storage and eventual distribution to the homes and businesses of Santa Cruz (Santa Cruz Surf 1890c: 3).

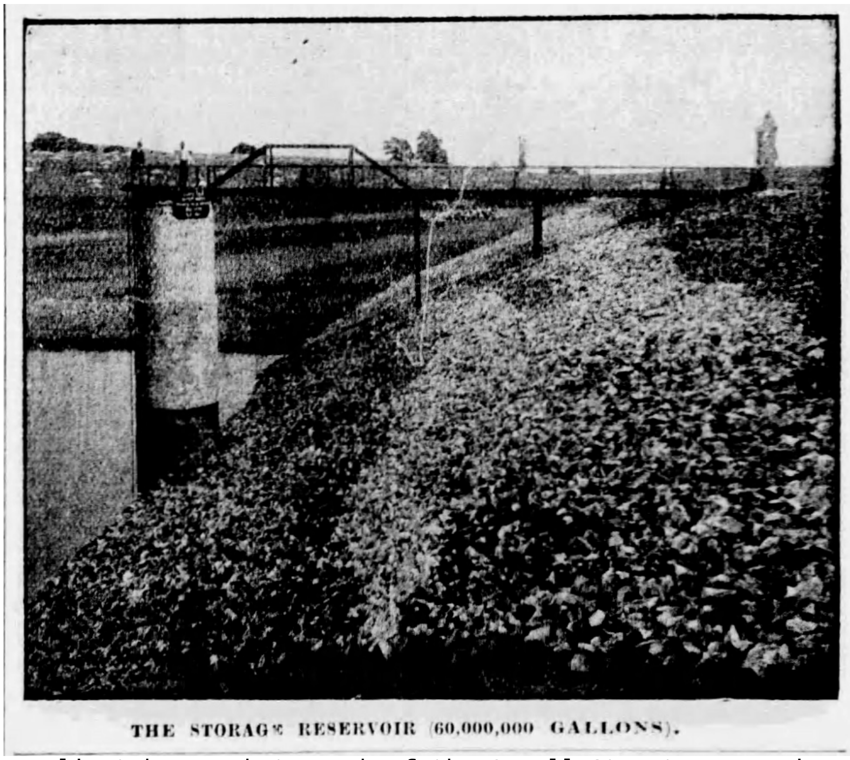



**Exhibit 8.** The earliest known photograph of the Cowell Street Reservoir published in the *Santa Cruz Surf* in 1892 (Santa Cruz Surf 1892: 2).

***Reggiardo Creek Diversion (Flume 1891, Dam 1912)***

A 965-foot-long flume was completed in 1891 connecting the west branch of Laguna Creek, colloquially known as Reggiardo Creek, to the main Laguna Creek by emptying out water to the north of the Laguna Creek Dam. The new flume was intended to help supplement the municipal supply from Laguna Creek, as the year-old Laguna Creek Dam was quickly inundated with sediment and less water than expected was being captured by the system overall (Santa Cruz Surf 1892: 2).

In 1912, R.S. Tait, the water superintendent, announced that a dam had been completed on Reggiardo Creek in order to aid in the supply of daily drinking water sourced from Laguna Creek. The level of Laguna Creek had been significantly reduced by a lack of rainfall in the watershed area, causing the supply of water in the impoundment to drop below sufficient levels to support the community (SC Evening News 1912: 2).

***High Street Distribution Reservoir (1904)***

In 1894, the City purchased a parcel of land located on the south side of High Street between present-day Laurent and Storey Streets for the construction of a Distribution Reservoir. The Cowell Reservoir was constructed to hold 60 million gallons, but it was carved into a porous limestone formation known as karst that caused approximately 1 million gallons of leakage daily. The Distribution Reservoir was intended to serve are a secondary reservoir for the Cowell Reservoir to preserve the water that was otherwise lost before it could be pumped into the distribution system (Santa Cruz County Assessor 1894; SCMU 2016: 1).

The site for the Distribution Reservoir overlapped Dodero Spring Creek (then called Meyrick Brook) and provided the added benefit of impounding a percentage of the water from this source while temporarily storing the water impounded from the City Water Works on Laguna and Reggiardo Creeks.

The survey and specifications for the new reservoir were completed in 1895 and the Santa Cruz Sentinel reported that the reservoir would have a capacity of 2.5 million gallons and cover three-quarters of an acre. Construction on the reservoir began in 1904 and it was completed later that year (Santa Cruz Sentinel 1895: 3, 1903: 4, 1904: 3).

***Liddell Spring Diversion (1913)***

Discussions about securing the title to Liddell Spring and utilizing it as a source of municipal water were gathering support in the City government beginning early in 1913. By July 1913, a pipeline between Liddell Spring and the main municipal pipeline from Laguna Creek was operational, and, at a rate of 590,000 gallons per day, was out-producing all the other existing municipal water sources (SC Evening News 1913a: 1).

***Crossing Street Pump Station (1913)***

In 1913, a new well was drilled on the San Lorenzo River at Crossing Street, just north of the present intersection of Highway 1 with the river. It was equipped by a 75-horsepower, 5-inch, three-step centrifugal pump that was installed by the United Iron Works. The pump was capable of pumping 500 gallons per minute and cost $1844 dollars at the time of installation (SC Evening News 1913b: 1).

***Acquisition of the Santa Cruz Water Company System (1913–1916)***

Fredrick Hihn passed away in 1913 and his ownership of the Santa Cruz Water Company passed to his children. The City seized the opportunity to acquire the Santa Cruz Water Company system, and in 1916 assumed full legal ownership of the entire system, which included right to water being drawn from Branciforte Creek, Carbenaro Creek, Majors Creek, and the San Lorenzo River (SCWD n.d.: 2; Monterey American 1913: 7; SC Evening News 1914: 1).

**Interwar Water Development in Santa Cruz (1918–1939)**

Water development during the early twentieth century interwar period in Santa Cruz was dominated by publicly funded projects. As the population increased in the eastern, mid-county areas such as Live Oak, small, private for-profit systems developed beginning in the 1930s to meet the increased demand in these neighborhoods that were otherwise unserved by the existing Santa Cruz infrastructure.

**Public Development (1918–1939)**

Public development during this period was predominantly focused on the repair and upgrade of existing system components. Although upgrades and additions were added to the several major facilities to increase the ability to store and improve the overall quality of municipal water during this period, with projects such as the Bay Street Reservoir in 1924 and the New Crossing Street Pumping Plant in 1929, the output was not widely increased between 1917 and 1930. Service began expanding into the areas to the east outside of the City with focused initiatives like the East Side Water Extension during this period (Brown and Dunlap 1956: 1-2).

***The Bay Street Reservoir (1924)***

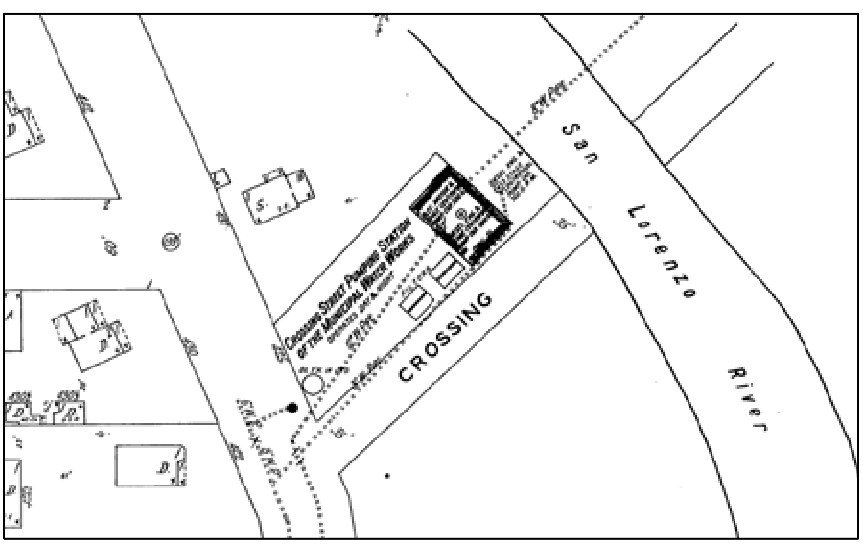
The Bay Street reservoir was completed in 1924 and was located 1 mile southeast of the Cowell Street Reservoir on a site to the east from the present intersection of Bay and Meder Streets (Exhibit 9). The 35-million-gallon capacity open-air tank was built to replace the Cowell Street reservoir. The Bay Street reservoir was constructed of stone and lined with concrete and was intended to be much more capable of reserving water accumulated from the surface stream sources for use during the dry summer and fall months (SCMU 2016: 1).

**Exhibit 9.** Construction of the Bay Street Reservoir in 1924 (SCPL 1924).

### *Crossing Street Pumping Plant (1929)*

In 1929, the City completed a new, modern pumping plant on the Lorenzo River on the southern side of Crossing Street across from the 1913 Crossing Street Pumping Plant site (Exhibit 10). Once complete, the plant went by the same name as its predecessor until it eventually was known simply as the Municipal Pumping Plant. Today, it is called the Coast Pump Station.

The new facility was designed by City engineer Roy Fowler and consisted of a pumping plant capable of producing 6 million gallons of potable water in a 24-hour period from the San Lorenzo River. The plant operated with the help of “diesel engines, pumps, motors, generators, and all other necessary auxiliary equipment” (SC Evening News 1928: 8). The plant also treated the water with chlorine, making it safer to drink (SCWD n.d.: 3; Brown and Dunlap 1956: 1; SC Evening News 1928: 8, 1929: 7).



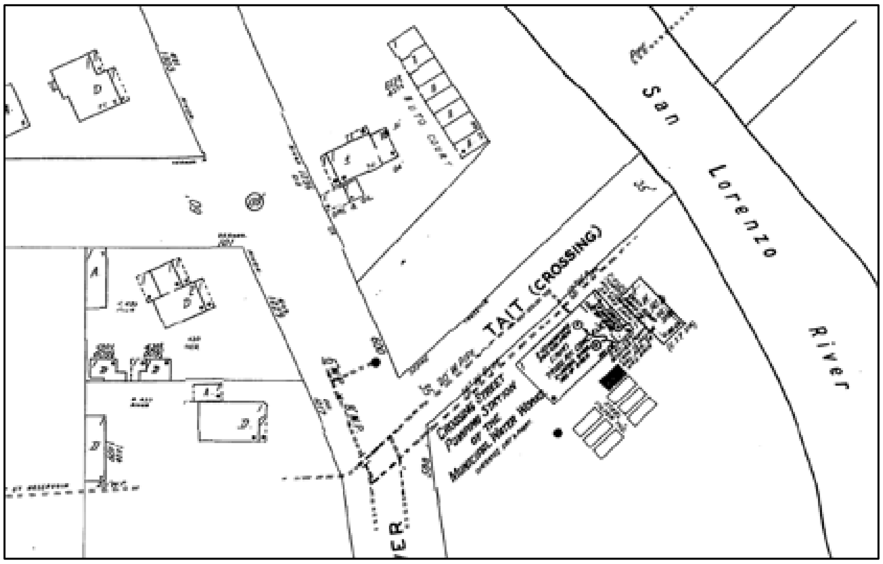



**Exhibit 10.** Comparison of the 1928 Sanborn Map (top) showing the old Crossing Street Pumping Plant and the 1928-1950 Sanborn Map showing the new facility completed in 1929 in approximately 1945 (Sanborn Map Company 1928: 103, 1928-1950: 103)

The low rainfall in winter 1931 prompted the City to drill four more wells at the site of the Crossing Street Pumping Plant. One of the wells was located at the site of the pumping plant on the west side of the river, while the remaining three were drilled on the east bank. This increased the output of the municipal water supply greatly, and allowed for expansion into other parts of the City. In 1934, the City boasted in the *Santa Cruz Sentinel* that 63.4 million gallons of water had earned the City a profit of $11,119 during April 1934 (Brown and Dunlap 1956: 14; SC Evening News 1931: 5, 1934b: 7).

In 1945, Crossing Street was renamed Tait Street for Water Superintendent R.S. Tait. A photograph of the Municipal Pumping Plant included in the 1956 investigative report into the Santa Cruz area water supply projects by engineers Brown and Dunlap demonstrates how the plant appeared during this period (Exhibit 11) (Santa Cruz Sentinel 1945: 8).


SANTA CRUZ MUNICIPAL PUMPING PLANT. Building houses low and high lift pumps and engine-driven generators. Pressure type filters are at right of building.

**Exhibit 11.** The Municipal Pumping Plant as it appeared in 1956 (Brown and Dunlap 1956: 18).

***East Side City Water Extension (1934)***

In 1934, work began on what was known as the East Side Water Extension, to extend the municipal water service into the Seabright and Live Oak areas of Santa Cruz via a new pipeline. Santa Cruz East Side residents C. W. Raisch, E. Brandt, George Ellison, Edith H. Evans, and Nathan Menderson donated the private property to the City needed for a right-of-way, and the pipeline extended from the municipal system to the areas of the City located on the east side of the San Lorenzo River. Additionally, two 1,000,000-gallon tanks were placed in De Laveaga Park in the north of the City as a reservoir for this branch of the system (Santa Cruz Sentinel 1933: 7, 1934c: 9).

**Private Development (1936–1939)**

In areas of the county that were not serviced by the municipal system, private systems such as the Beltz system were developed by residents to provide water for other residents of the area.

***Beltz Water Company (1936)***

In 1936, the County granted Iowa native, Charles Lemar Beltz, the rights to begin operating a private water system in the area of the County roughly bounded by Capitola Road to the north, Rodeo Gulch and Corcoran’s Lagoon to the west, the bay to the south, and 41st Avenue to the east. The ambitious service area of the Beltz system covered approximately 25% of the Live Oaks district with water sourced from ground wells located throughout the district and conveyed through pipelines situated beside Live Oak roads (Santa Cruz Sentinel 1936a: 2, 1936b: 8, 1947: 1).

**Post-War Growth (1945–1984)**

Many of the post-war water projects in Santa Cruz can be characterized as repair of existing infrastructure and expansion of the overall water system to support rapid population growth. The years following World War II provoked westward migration and an increase in birth rates, causing the population of California to increase from 6.95 million to 10.65 million between 1940 and 1950. In Santa Cruz, the growth of the community from 27,430 to 41,680 between 1940 and 1950 caused the common seasonal water shortages during dry months to become problematic in regards to growth and potential for community expansion (SCPL n.d.: 1).

In 1945, the state recognized a water shortage in Santa Cruz and authorized an investigation of available water resources. In 1946, the acute nature of the water crisis prompted the community to request a survey to determine an inventory of the available groundwater supply and plan for growth in the future. Completed In 1948, the survey determined that although the San Lorenzo pumping plant was running at full capacity, 24 hours per day during the dry summer of 1947, the river was so low that the entire run was being diverted through the pumps and into the City mains for consumption (SWRB 1953: 57; Brown and Dunlap 1956: 1–2).

Prompted by these concerns, in 1953, the State Water Resources Board released a report that inventoried available surface and underground water sources in the County and projected increased water utilization that exceeded the available water in Pajaro Valley, the Soquel Creek area, and the coastal area around and including Santa Cruz. The report identified requirements for supplemental water for Santa Cruz and areas served by the City of Santa Cruz Water Department (SWRB 1953: 57).

The County formed the Santa Cruz County Flood Control and Water Conservation district in 1955 and hired Creegan & D’Angelo Civil Engineers in 1956 to complete an extensive survey identifying dam sites, groundwater sources, and additional steps to improve control of the water supply throughout the County to compete with the City’s proposals. The report asserted that population growth was a major concern for the water supply in the City because “the City of Santa Cruz has current water requirements which equal the capacity of the existing water supply system during a relatively dry era. Should an exceptionally dry season be experienced, there would be a serious water shortage in the City of Santa Cruz” (Creegan and D’Angelo 1957: 8).

Present supplies were determined to be insufficient for standard rates of population growth, including years that rainfall was considered more plentiful. Despite the rate of water consumption in the service area tripling between the mid-1930s and mid-1950s, there had been no additions to the municipal water supply during that time. Creegan & D’Angelo would also serve as the engineers for the Santa Cruz County Flood Control and Water Conservation District Advisory Committee, and ultimately, their recommendation to the council to remedy the current water crisis in the City was a dam on Newell Creek (Santa Cruz Sentinel 1953: 1, 1954: 1, 1958a: 4).

**Public Development (1945–1984)**

During the post-war era, a number of general obligation and revenue bonds helped to fund a wide range of water-related projects in Santa Cruz, including routine maintenance and transmission line replacements, but also projects such as the Newell Creek Dam and the Graham Hill Treatment Plant. The need for these projects was driven by the need for more water to support a growing, post-war population, but the use of bonds allowed for flexibility to project for future growth. In 1974, the *Santa Cruz Sentinel* surmised that “successful bond issues in 1958, 1963 and in 1967 reflected public confidence in the water administration and a recognition of the needs for more water, apparently, for there was relatively little difficulty getting approval” (Santa Cruz Sentinel 1974: 1–2).

***Construction of Newell Creek Dam (1960, modified in 1985)***

As a surface water storage on Newell Creek became a distinct reality following the recommendations of Creegan and D'Angelo, City Water Department Director, Weston Webber, voiced his support for the project in 1957. Ultimately, of the five proposed dams, only the Newell Creek Dam would come to fruition (Santa Cruz Sentinel 1957a: 1, 1957b: 13, 1957c: 12).

In 1958, the University of California Regents announced that they were considering the Cowell Ranch in the City of Santa Cruz as the site of a future University of California Campus. The City would be required to provide services and facilities for the prospective University community, which early figures suggested was to include around 2,500 students. In anticipation of the Water Revenue Bond Election in November 1958 to approve the bonds necessary to construct the Newell Creek Dam, a new water treatment plant, and pipelines to transport the water, the Santa Cruz Sentinel published an article outlining the impact of the proposed bonds. In reference to the speculative University in the City, the closing paragraph of the article states that "University officials know that the present water supply of Santa Cruz is inadequate, even for normal needs. Failure to correct this situation could end all chance of the selection of Santa Cruz as the University site." (Santa Cruz Sentinel 1958b: 1, 1961c: 1, 1961e: 1).

On November 5, 1958, the voters of the City of Santa Cruz approved $5.5 million in water revenue bonds necessary for the City to purchase 2,162 acres of land in the Newell Creek watershed from the San Lorenzo Valley Water District and build a dam on the site. Creegan & D'Angelo designed the earthfill dam (SCWD n.d.: 2; Santa Cruz Sentinel 1958a: 4).

Contractors Williams and Burrows Inc. of Belmont, California, began the construction of the Newell Creek Dam and preparation for the creation of Loch Lomond in 1960. The early stages of planning and execution were made more difficult by the narrow valley, allowing only one road for ingress and egress for equipment and supplies. The construction of the 195-foot-tall earthfill dam began with a "grout curtain" that pushed concrete 100 feet into the bedrock to fill any fissures or imperfections, ensuring a structurally sound base. The height and width of the dam's crest was first determined by the reinforced concrete ends. The embankment was then built up using successive layers of random fill from the immediate area, compacted with sheepsfoot tampers above and around the 300 feet of impervious material at the core of the embankment. Four construction personnel lost their lives in October 1960 during the layered construction of the embankment. A brass plaque commemorating these men was commissioned and remains today on the southwest elevation of the Control House (Santa Cruz Sentinel 1960a: 15, 1960b, 1).

The Newell Creek Dam was completed and filling steadily with water by 1961; however, the recreation area on the resulting reservoir was yet to be built. Keeping with the Scottish naming tradition started by Scotsman John Burns when he christened the mountain Ben Lomond in the 1850s, the reservoir was dedicated Loch Lomond during two days of festivities on July 27 and 28, 1963 (Santa Cruz Sentinel 1963: 1).

By 1964, the City distributed a notice to bid on the construction of the Loch Lomond Recreation Development. With the help of a $149,000 state grant, the Loch Lomond Recreation Area was completed by the spring of 1965. It included picnic areas, a concessions building, parking areas, two docks, and a boat launch. An all-weather road leading from Lompico to the Recreation Area was a crucial improvement constructed during this phase of the Project. It allowed visitors to experience the new recreation activities available at Loch Lomond, while simultaneously comprehending the realities of water storage and use in the county (Santa Cruz Sentinel 1964a: 3).

During the early 1980s, a survey completed by the Division of Safety of Dams demonstrated that the spillway at Newell Creek Dam did not meet the newest safety criteria for probable maximum flood conditions. A portion of the 1984 funds allocated for modifications and upgrades to the municipal system for were apportioned toward the upgrade of the dam's spillway wall. The upgrades were implemented in 1985, and included heightening the Newell Creek Dam spillway wall and the installation of a permanent aerator system (SCWD n.d.: 2; Santa Cruz Sentinel 1984: 3).

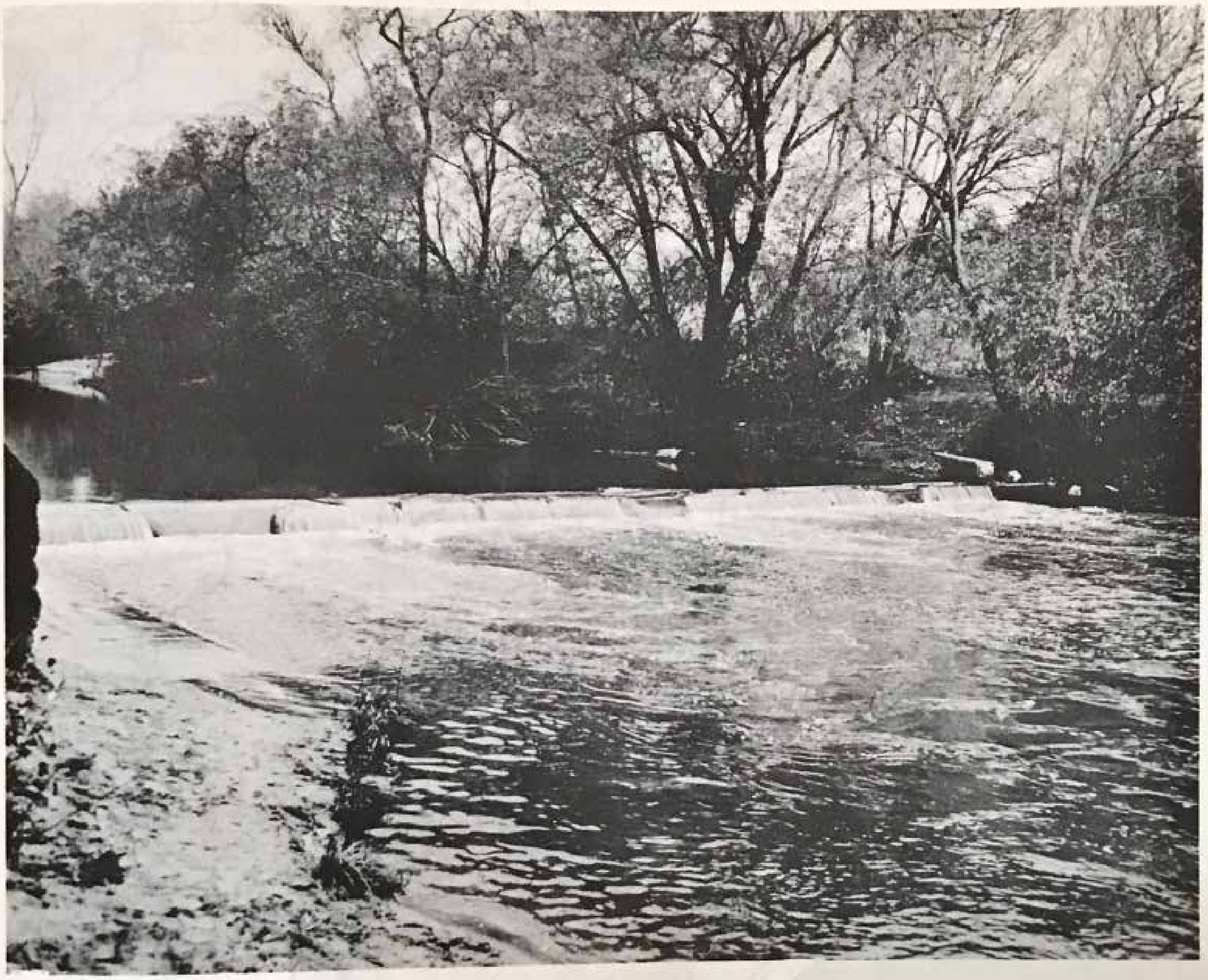
***Graham Hill Water Treatment Plant (1960, Upgraded in 1987)***

The Graham Hill Water Treatment Plant was a water filtration and treatment facility completed in 1961 and located beside Graham Hill Road. It was planned and completed during the same period as the Newell Creek Dam and also funded by the same water revenue bonds that helped to build the dam. The plant was designed with a capacity to treat 12-million gallons of water per day. Water derived from the coastal watersheds including Laguna Creek, Reggiardo Creek, Liddell Spring and Majors Creek is transported through a blend of gravity and pumping to the Graham Hill Water Treatment Plant to be filtered and treated before distribution as drinking water (SCWD n.d.: 3; SCMU 2016: 1; Santa Cruz Sentinel 1961d: 16).

The Graham Hill Treatment Plant was upgraded and enhanced in 1987 following a push for major upgrades throughout the municipal system beginning in 1984 (See section 1.4.1.5 Infrastructure Upgrades (1984) for more information) (SCMU 2016: 1).

***Tait Street Diversion Intake (Added 1961, Reconfigured in 1983)***

The Tait Street Diversion, as it called today, is presently located just up river from the Coast Pump Station. Together, the combined Tait Street Diversion and Coast Pump Station facility continues to be one of the most important sources of water for the City. Surface diversion rights for the San Lorenzo River date back to 1924 at what is now the Coast Pump Station but was first known as the Crossing Street Pumping Plant and later the Municipal Pumping Plant (see sections 1.2.2.4 and 1.3.1.2). Accounts of a functional diversion across the river near the pumping plant date back to at least 1930s. A photograph included in the 1956 investigative report into Santa Cruz area water supply projects by engineers Brown and Dunlap included a photograph of the existing diversion on the site during this period (Exhibit 12).



SANTA CRUZ DIVERSION DAM on the San Lorenzo River. Approximately one-half of the water used by the city is obtained from this source.

**Exhibit 12.** Existing diversion dam across the San Lorenzo River in 1956 (Brown and Dunlap 1956: 15)

By 1960 when the large-scale modernization campaign across the City was in progress, a design for a new intake structure on the existing pumping plant diversion dam was also planned. The new intake integrated the existing dam (age unknown) into the design for a new, modern intake located on the east bank of the river that was complete with a spillway fish ladder and new 20″ and 24″ transmission pipelines (Santa Cruz Sentinel 1934a: 7; Brown and Caldwell 1960: 1).

In 1983, the intake was again redesigned. The new design relocated the intake from the east bank of the river to the west bank while simultaneously upgrading all electrical controls and switch gear and relocating it above flood levels (SCWD n.d.: 3; Dewante and Stowell 1983: 3).

***Felton Diversion Station (1976)***

The Felton Diversion was installed on the San Lorenzo River north of Henry Cowell State Park and completed in 1976. James M. Montgomery of Consulting Engineers Inc. designed the diversion structure and the contractors for the project were the Dan Captuo Company. The structure is comprised of a permanent concrete foundation spanning the river containing an inflatable rubber dam. The inflatable dam, or bladder, can be raised to maintain and impoundment for the diversion of water which is transported by pipeline to supplement storage at Loch Lomond. The inflatable dam can also be lowered to control the flow of water during a storm surge or other similar event. The structure also includes a fish-screened intake structure, a conventional sump and high-lift pump station, a fish ladder, and a controls building (JMM 1969: c-3, 1970: VII-2; Santa Cruz Sentinel 1976: 13).

***Infrastructure Upgrades (1984)***

In January of 1982, a powerful storm caused flooding throughout the Santa Cruz County. It was discovered that a main pipeline from Loch Lomond had burst and was leaking at an alarming rate. Although the damaged section of pipeline was relocated and repaired by the end of the year, the event renewed community attention to the potential for the aging components of the municipal system to require upfront repair and maintenance (Santa Cruz Sentinel 1982: 1, 8; Cardona and Associates 1982).

In 1984, the Santa Cruz Water Department received $11.7 million dollars through private Certificates of Participation in order to fund upgrades and modernizations to the water infrastructure system throughout the City. The upgrades were wide-spread and included the renovation and upgrade of the Graham Hill Water Treatment plant, the construction of a laboratory to monitor water quality, new storage tanks in the Rolling Wood service area, enlarging the capacity of the Beltz Water Treatment plant to 2-million gallons daily, and improvements to the Newell Creek Dam spillway (SCWD n.d.: 2; Santa Cruz Sentinel 1984: 3).

**Private Systems Acquisition (1967-1969)**

The City of Santa Cruz purchased several private water systems between 1967 and 1969, including the Beltz Water Company, the Rolling Woods Utilities Inc., and Pestana Water Systems. These companies and their service infrastructure were all located in areas of Santa Cruz that had been only recently come into the City’s sphere of influence. The acquisition of these systems allowed the City to organize reliable water distribution services to areas such as Live Oak (SCMU 2016: 2)

***Beltz Water Company Acquisition (1967)***

Charles Beltz passed away in 1947 and left the operation of the Beltz Water Company to his only son, Chester Beltz. Under the supervision of his son, the company developed a both a wider, and more dense service area in response to the massive post-war population growth in the County. To accommodate the overall population growth of the County from 45,057 residents in 1940 to 120,882 residents in 1970, many of the larger agricultural properties and larger estates within the Beltz service area in Live Oak were subdivided to accommodate new, residential development. By 1955, the Beltz Water Company system included six source wells that allowed the system to accommodate incremental growth from 900 customers in 1955 to approximately 1,500 customers by 1967 (Santa Cruz Sentinel 1947: 1, 1955: 18, 1967a: 4, 1967b: 5, 1967c: 24; SCPL n.d.: 1; UCSB 2020).

The Beltz Water company entered into negotiations with the City of Santa Cruz beginning in 1965 to set a price for the purchase of the Beltz system. When the City of Santa Cruz finally purchased the Beltz Water Company System in 1967 for $245,000, the acquisition equipped the City with an additional source of groundwater from six existing wells (Exhibit 13). However, due to inadequate means to treat the high levels of iron and manganese in the Beltz well water, after the purchase, the wells were temporarily discontinued. Instead, the Beltz conveyance infrastructure was tied into the existing municipal system and customers began receiving water on July 1, 1967 (Santa Cruz Sentinel 1967a: 4, 1967b: 5, 1967c: 24).

# CONTINUATION SHEET

Property Name: Tait Diversion & Coast Pump Station Site



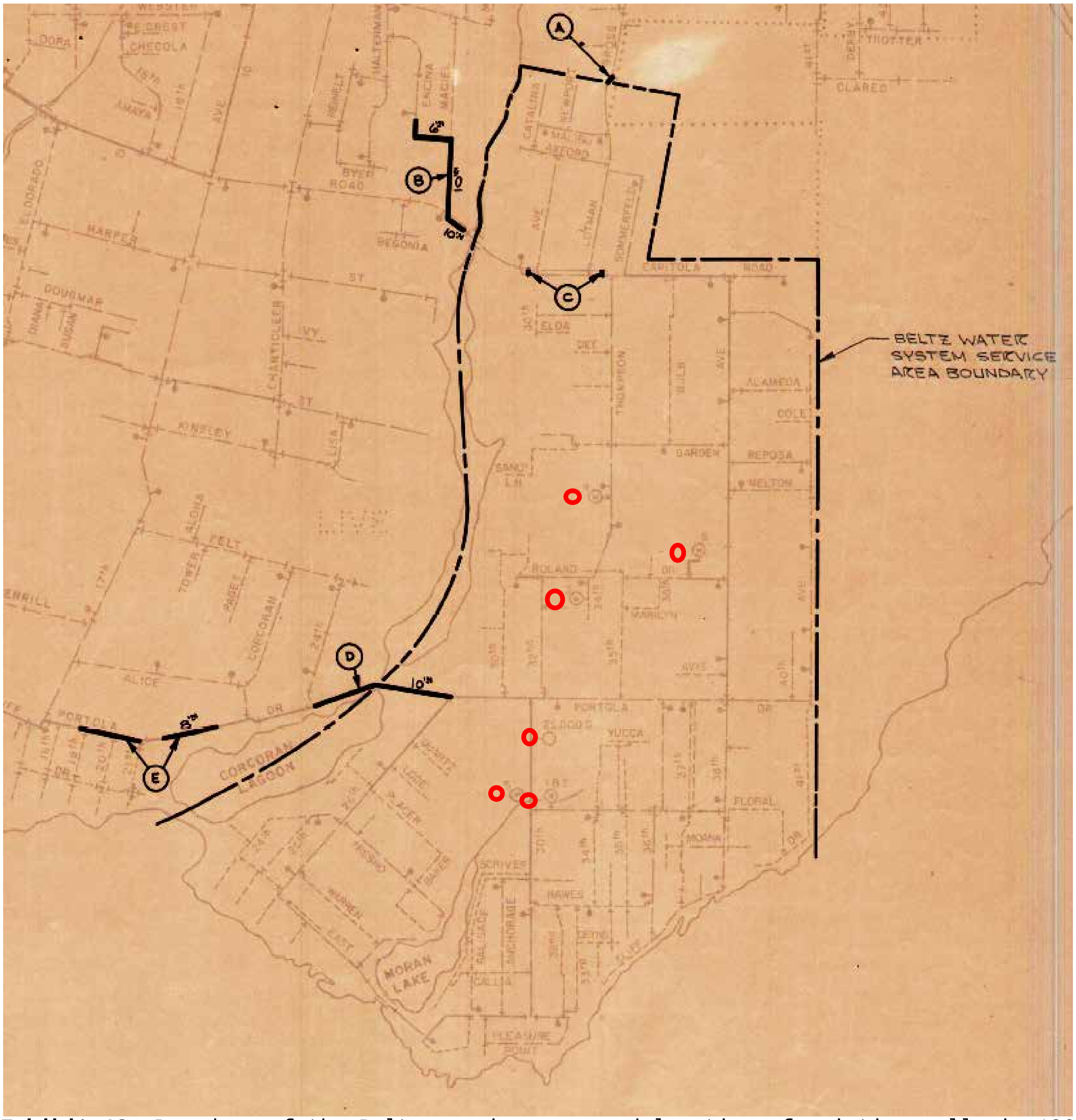



**Exhibit 13.** Boundary of the Beltz service area and location of existing wells in 1967 (circled in red). The letters show some of the tie-ins built by the Santa Cruz Water Department to utilize the Beltz infrastructure (SCWD 1967: D)

In 1972, an Iron and Manganese removal treatment plant was constructed at the site of well 6 located off Roland Avenue that allowed for the treatment of 1,000,000 gallons of water daily for use in the eastern section of the municipal system. In 1973, it was announced by Water Department director, Wes Webber, that the site containing well 6 would also receive a new well in anticipation of expansion of the new treatment plant when possible to increase the daily output of the Beltz system overall. This expansion of the plant took place in 1985 and was funded in part by the $11.7 million in funds allocated for major upgrades throughout the municipal system during the mid-1980s (Santa Cruz Sentinel 1973: 15; SCWD 1985: G-4).

***Pestana Water Company (Founded 1961, Acquired 1969)***

John Pestana founded the Pestana Water Company in 1961 to serve the modest Santa Cruz Gardens subdivision located in the hills north of Live Oak. Pestana, along with his brother, Ernie Pestana, were part owners of a sub developer from Santa Clara County responsible for the construction of the Santa Cruz Gardens subdivision in the early 1960s. In 1962, Chester Beltz, owner of the Beltz Water Company, was hired to operate the Pestana Water Company system (Santa Cruz Sentinel 1961a: 10, 1961b: 28, 1969a: 3).

The Pestana Water Company was sold to the City for $36,615 in November, 1969. The purchase of the three-well system added 243 customers to the municipal service system. The City immediately improved the pump operating the system, which was only capable of pumping 286 gallons per minute. In 1971, a pipeline was constructed to connect the Pestana system to the City main (Santa Cruz Sentinel 1969a: 3, 1969b: 4).

***Rolling Woods Utilities, Inc. (Founded 1963, Acquired 1969)***

Rolling Woods Utilities Inc. was formed in 1963 to serve the Rolling Woods subdivision located in the hills beside Graham Hill Road north of Pasatiempo. The City purchased the company in 1969, at which time the service area extended to 135 customers (Santa Cruz Sentinel 1969c: 13, 1969b: 4).

**NRHP/CRHR Statement of Significance**

**NRHP Criterion A: associated with events that have made a significant contribution to the broad patterns of our history.**

**CRHR Criterion 1: is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.**

Water management infrastructure associated with municipal water districts is a common property type throughout the County and the State of California. Components of water infrastructure systems have been considered significant under NRHP Criterion A and CRHR Criterion 1 when associated with trends and events that have made a significant contribution to the broad patterns of our history, particularly in regional agricultural or local economic development. Specifically, the Laguna Creek Dam, which is part of the County’s municipal water system, is one such structure. As a well-preserved masonry water management structure dating to 1890, it is a physical example of pioneering water management infrastructure in California. As such, the dam has been recommended as individually eligible for listing in the NRHP and the CRHR under Criterion A/1 for its association with early advances in water management in California, specifically through creation of the City’s first municipal water distribution system that resulted in supplying the community of Santa Cruz with municipal water services and led to subsequent expansion of water infrastructure in the region. The period of significance for the dam is 1890, the year it was initially constructed.

While the Tait Diversion and Coast Pump Station are part of the County’s municipal water system, these structures are early to mid-twentieth century additions to the system. While these types of systems may have influenced or supported the growth of local communities, this is far too common an association to merit a blanket conclusion of historical significance under NRHP Criterion A or CRHR Criterion 1 within the context of municipal water management systems. At some point in the past, all forms of historic-era infrastructure were associated locally or regionally with municipal growth or economic development, actual or intended. It is often exceedingly difficult to prove whether historic-era infrastructure associated with recognizable growth actually caused or merely accommodated the growth.

The Tait Diversion and Coast Pump Station combined facility is not associated with any extraordinary event or events occurring within the context of early County development that would distinguish the structure from the vast array of water management systems dotting the California landscape. Moreover, research into the history of the Tait Diversion and Coast Pump Station combined facility revealed no evidence suggesting that the structures are associated with an alternative, more unique event or pattern of events considered historically significant. For these reasons, the Tait Diversion and Coast Pump Station combined facility does not appear to meet NRHP Criterion A or CRHR Criterion 1.

**NRHP Criterion B: associated with the lives of significant persons in our past.**

**CRHR Criterion 2: is associated with the lives of persons important in our past.**

To be found eligible under Criterion B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research failed to indicate any such direct association between individuals that are known to be historic figures at the national, state, or local level and the Tait Diversion and Coast Pump Station combined facility. The Tait Diversion is named for a Water Superintendent R.S. Tait, who was instrumental in the construction of both municipal pumping plants on the San Lorenzo River. While he was an advocate of the project, the plant does not appear to be the site at which Tait conducted the work for which he is known, and furthermore, the assignment of Tait’s name to the diversion appears to be a relatively recent addition made at some point after the 1980s.

The Coast Pump Plant and the Tait Diversion were subsequently modified after they were first constructed in 1929 and c.1934, respectively, by several individuals and early regional water management developers, in order to provide municipal water in the Santa Cruz region. As such, the facility represents the collective efforts of many individuals, rather than the work of any single individual. Therefore, the facility is not known to have any historical associations with people important to the nation’s or state’s past. Due to a lack of identified significant associations with important persons in history, the facility does not appear eligible under NRHP Criterion B or CRHR Criterion 2.

**NRHP Criterion C: embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.**

**CRHR Criterion 3: embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.**

Overall, the Tait Diversion and Coast Pump Station combined facility itself is a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular combination pumping plant and diversion dam facility type. The Coast Pump Station was completed in 1929; however, major subsequent alterations, including the construction of a large addition in 1979, cladding the entire building with ribbed metal siding covering the original fenestration patterns, and fitting the original roof with a gable roof clad in corrugated metal material obscuring the trussed roof shape, have significantly diminished the integrity of design, materials, and workmanship. The Tait Diversion has also seen multiple alterations and additions over time, including the installation of two different intake structures in 1960 and 1984, that have eliminated the majority of the original early 1930s construction materials once composing the resource. This has caused it to lose all integrity in the areas of design, materials, and workmanship. Additionally, the designer of the Coast Pump Station, City Engineer Ray Fowler, does not appear to have reached the level of notoriety to be considered a master in the field of engineering, and the original designer of the Tait Diversion is unknown. Overall, the design for the Tait Diversion and Coast Pump Station do not appear to be distinctive or innovative in design.

Overall, the combined facility has experienced multiple alterations over time in order to accommodate modern equipment and ensure ongoing use. It is representative of a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular pumping plant or diversion dam facility type. Consequently, the Tait Diversion and Coast Pump Station appear to lack significance under NRHP Criterion C or CRHR Criterion 3.

**NRHP Criterion D: have yielded, or may be likely to yield, information important in history or prehistory.**

**CRHR Criterion 4: has yielded, or may be likely to yield, information important in prehistory or history.**

There is no evidence to indicate that the subject property is likely to yield any additional information important to prehistory or history beyond what is already known. The subject property is also not associated with an archaeological site or a known subsurface cultural component. Therefore, the subject property does not appear eligible under NRHP/CRHP Criterion D/4.

**City of Santa Cruz Statement of Significance**

1. **Recognized as a significant example of the cultural, natural, archaeological, or built heritage of the city, state, or nation.**

The Coast Pump Station does not constitute the first, last, or only pumping plant located in the City or County. The remaining original section of the Tait Diversion possibly dating to the early 1930s does not constitute the first, last, or only surface diversion in the history of Santa Cruz water development and has also been subsequently modified to a degree that it is unrecognizable and no longer retains historic integrity. Neither component of the site can be called a significant example of their facility type because each constitutes a conglomeration of construction methods and lacks sufficient engineering distinction. Therefore, the facility does not appear eligible under City Criterion 1.

2. **Associated with a significant local, state, or national event.**

Archival research did not find any associations with events that have made a significant contribution to the broad patterns of local or regional history. While the subject property was developed overtime in conjunction with the development of Santa Cruz water infrastructure, the development of the Coast Pump Station was the second plant of this kind in the City and is a product of growth and expansion instead of the implementation of a new technology for this facility type. The Tait Diversion and Coast Pump Station does not constitute the first, last, or only such facility pumping plant located in the City or County. Therefore, the property does not appear eligible under City Criterion 2.

3. **Associated with a person or persons who significantly contributed to the development of the city, state, or nation.**

Archival research failed to indicate any such direct association between individuals that are known to be historic figures at the national, state, or local level and the Tait Diversion and Coast Pump Station combined facility. The Tait Diversion is named for Water Superintendent R.S. Tait, who was instrumental in the construction of both municipal pumping plants on the San Lorenzo River. While he was an advocate of the project, the plant does not appear to be the site at which Tait conducted the work for which he is known, and furthermore, the assignment of Tait's name to the diversion appears to be a relatively recent addition made at some point after the 1980s.

The Coast Pump Plant and the Tait Diversion were subsequently modified after they were first constructed in 1929 and c.1934, respectively, by several individuals and early regional water management developers, in order to provide municipal water in the Santa Cruz region. As such the facility represents the collective efforts of many individuals, rather than the work of any single individual. Therefore, as the facility is not known to have any historical associations with people important to the nation's or state's past, the facility does not appear eligible under City Criterion 3.

**4. Associated with an architect, designer, or builder whose work has influenced the development of the city, state, or nation.**

The designer of the Coast Pump Station, City engineer Ray Fowler, does not appear to have reached the level of notoriety to be considered a master in the field of engineering, and the original designer of the Tait Diversion is unknown. Therefore, for the reasons stated above, the facility does not appear eligible under City Criterion 4.

**5. Recognized as possessing special aesthetic merit or value as a building with quality of architecture and that retains sufficient features showing its architectural significance.**

Overall, the Tait Diversion and Coast Pump Station combined facility itself is a conglomeration of construction methods and lacks sufficient engineering distinction to be significant within any particular combination pumping plant and diversion dam facility type. The Coast Pump Station was completed in 1929; however, major subsequent alterations, including the construction of a large addition in 1979, cladding the entire building with ribbed metal siding covering the original fenestration patterns, and fitting the original roof with a gable roof clad in corrugated metal material obscuring the trussed roof shape, have significantly diminished the integrity of design, materials, and workmanship. The Tait Diversion has also seen multiple alterations and additions over time, including the installation of two different intake structures in 1960 and 1984, that have eliminated the majority of the original early 1930s construction materials once composing the resource. This has caused it to lose all integrity in the areas of design, materials, and workmanship. As such, the facility does not appear eligible under City Criterion 5.

**6. Recognized as possessing distinctive stylistic characteristics or workmanship significant for the study of a period, method of construction, or use of native materials.**

After its completion in 1929, the Coast Pump Station was subsequently renovated and fitted with metal ribbed siding and corrugated metal roofing material. As a result, the building has been modified to the extent that it no longer retains historic integrity and is no longer able to convey significance dating to this period. After its completion c.1934, the Tait Diversion has seen multiple upgrades to intensify its productivity overtime and as a result has been modified to the extent that it no longer retains historic integrity and is no longer able to convey significance dating to this period. Therefore, the facility does not appear eligible under City Criterion 6.

**7. Retains sufficient integrity to accurately convey its significance.**

Due to a number of large-scale alterations resulting in the obscuring of historic materials and design, the Tait Diversion and Coast Pump Station are no longer capable of conveying the historic significance of a property dating to the early-twentieth-century period of water development in Santa Cruz. Therefore, the facility does not appear eligible under City Criterion 7.

**Integrity Discussion**

In addition to not meeting any of the significance Criteria, the Tait Diversion and Coast Pump Station lacks historic integrity. The structures of the Tait Diversion and Coast Pump Station combined facility are still located in their historic location, retain their historic alignment, and continue to provide water for the municipal water supply. Both features have been heavily modified and now include modern construction materials that obscure the historic materials, in some cases entirely. This has caused the loss of integrity in the areas of design, material, workmanship, feeling, and setting.

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# Appendix H

## Noise Modeling Outputs

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# Table of Contents

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FORMS FIELD DATA REPORT

# Field Noise Measurement Data

| Record: 1310 | |
|---|---|
| Project Name | *Santa Cruz Water Rights EIR* |
| Project # | *11633* |
| Observer(s) | *Michael Carr, INCE* |
| Date | *2020-05-13* |

| Meteorological Conditions | |
|---|---|
| Temp (F) | *65* |
| Humidity % (R.H.) | *35* |
| Wind | *Light* |
| Wind Speed (MPH) | *2* |
| Wind Direction | *North* |
| Sky | *Clear* |

| Instrument and Calibrator Information | |
|---|---|
| Instrument Name | |
| Instrument Name Lookup Key | |
| Manufacturer | *Larson Davis* |
| Model | *831* |
| Serial Number | *2559* |
| Calibration Date | *042019* |
| Calibrator Name | |
| Calibrator Name Lookup Key | |
| Calibrator Manufacturer | *Larson Davis* |
| Calibrator Model | *Cal 200* |
| Pre-Test (dBA SPL) | *114* |
| Windscreen | *Yes* |
| Weighting? | *A-WTD* |
| Slow/Fast? | *Slow* |

| Monitoring | |
|---|---|
| Record # | *ST-1* |
| Site ID | *Beltz 8* |
| Site Location Lat/Long | *36.966815, -121.968616* |
| Begin (Time) | *08:43:00* |
| End (Time) | *08:58:00* |
| Leq | *42.9* |
| Lmax | *62* |
| Lmin | *35.9* |
| Other Lx (Specify Metric) | *L* |
| Primary Noise Source | *Birds and foliage* |
| Other Noise Sources (Background) | *Birds, Distant Aircraft, Distant Dog Barking, Distant Traffic, Rustling Leaves* |
| Other Noise Sources Additional Description | *Distant emergency sirens* |
| Is the same instrument and calibrator being used as previously noted? | *Yes* |
| Are the meteorological conditions the same as previously noted? | *Yes* |

FORMS FIELD DATA REPORT

| Description / Photos | |
| --- | --- |
| Terrain | *Mixed* |

| Site Photos | |
| --- | --- |
| Photo |  |
| Comments / Description | *Looking East* |

| Monitoring | |
| --- | --- |
| Record # | *ST-2* |
| Site ID | *Beltz 10* |
| Site Location Lat/Long | *36.966023, -121.971761* |
| Begin (Time) | *09:20:00* |
| End (Time) | *09:35:00* |
| Leq | *59.4* |
| Lmax | *61* |
| Lmin | *58.6* |
| Other Lx (Specify Metric) | *L* |
| Primary Noise Source | *Industrial* |
| Other Noise Sources Additional Description | *Cooling fan for VFD control for submersible pump.* |
| Is the same instrument and calibrator being used as previously noted? | *Yes* |
| Are the meteorological conditions the same as previously noted? | *Yes* |

FORMS FIELD DATA REPORT

| Description / Photos | |
|---|---|
| Terrain | *Soft* |

| Site Photos | |
|---|---|
| Photo |  |
| Comments / Description | *Looking West towards vfd power supply* |

| Monitoring | |
|---|---|
| Record # | *ST-3* |
| Site ID | *Beltz 12* |
| Site Location Lat/Long | *36.984490, -121.968026* |
| Begin (Time) | *10:07:00* |
| End (Time) | *10:22:00* |
| Leq | *53.6* |
| Lmax | *68.7* |
| Lmin | *46.5* |
| Other Lx (Specify Metric) | *L* |
| Primary Noise Source | *Traffic* |
| Other Noise Sources (Background) | *Distant Aircraft, Distant Industrial, Rustling Leaves* |
| Other Noise Sources Additional Description | *Traffic on Hwy 1, industrial area activity, birds, occasional hammering, fork lift loading truck ~125' north* |
| Is the same instrument and calibrator being used as previously noted? | *Yes* |
| Are the meteorological conditions the same as previously noted? | *Yes* |

FORMS DUDEK FIELD DATA REPORT

| Source Info and Traffic Counts | |
|---|---|
| **Number of Lanes** | *1* |
| **Lane Width (feet)** | *10* |
| **Roadway Width (feet)** | *20* |
| **Roadway Width (m)** | *6.1* |
| **Distance to Roadway (feet)** | *50* |
| **Distance to Roadway (m)** | *15.3* |
| **Distance Measured to Centerline or Edge of Pavement?** | *Centerline* |
| **Roadway Type** | *AC* |
| **Estimated Vehicle Speed (MPH)** | *15* |
| **Speeds Estimated by:** | *Driving the Pace* |

| Traffic Counts | |
|---|---|
| **Vehicle Count Summary** | *A 4, MT 1, HT 0, B 0, MC 0* |
| **Select Method for Recording Count Duration** | *Enter Manually* |
| **Counting Both Directions?** | *Yes* |
| **Count Duration (minutes)** | *15* |
| **Vehicle Count Tally** | |
| **Select Method for Vehicle Counts** | *Use Counter (+/-)* |
| **Number of Vehicles - Autos** | *4* |
| **Number of Vehicles - Medium Trucks** | *1* |
| **Number of Vehicles - Heavy Trucks** | *0* |
| **Number of Vehicles - Buses** | *0* |
| **Number of Vehicles - Motorcyles** | *0* |

| Description / Photos | |
|---|---|
| **Terrain** | *Soft* |

## Site Photos

**Photo**

| | |
|---|---|
| **Comments / Description** | *Looking towards existing tanks* |

FORMS DUDEK FIELD DATA REPORT

| Monitoring | |
|---|---|
| Record # | ST-4 |
| Site ID | Beltz 9 |
| Site Location Lat/Long | 36.962287, -121.972853 |
| Begin (Time) | 10:40:00 |
| End (Time) | 10:55:00 |
| Leq | 45.7 |
| Lmax | 58.1 |
| Lmin | 36.7 |
| Other Lx (Specify Metric) | L |
| Primary Noise Source | Traffic |
| Other Noise Sources (Background) | Birds, Distant Aircraft, Distant Dog Barking, Distant Kids Playing, Rustling Leaves |
| Is the same instrument and calibrator being used as previously noted? | Yes |
| Are the meteorological conditions the same as previously noted? | Yes |

| Source Info and Traffic Counts | |
|---|---|
| Number of Lanes | 2 |
| Lane Width (feet) | 12 |
| Roadway Width (feet) | 24 |
| Roadway Width (m) | 7.3 |
| Distance to Roadway (feet) | 124 |
| Distance to Roadway (m) | 37.8 |
| Distance Measured to Centerline or Edge of Pavement? | Centerline |
| Roadway Type | AC |
| Estimated Vehicle Speed (MPH) | 25 |
| Speeds Estimated by: | Driving the Pace |
| Posted Speed Limit Sign (MPH) | 25 |

| Traffic Counts | |
|---|---|
| Vehicle Count Summary | A 37, MT 0, HT 0, B 0, MC 0 |
| Select Method for Recording Count Duration | Enter Manually |
| Counting Both Directions? | Yes |
| Count Duration (minutes) | 15 |
| Vehicle Count Tally | |
| Select Method for Vehicle Counts | Use Counter (+/-) |
| Number of Vehicles - Autos | 37 |
| Number of Vehicles - Medium Trucks | 0 |
| Number of Vehicles - Heavy Trucks | 0 |
| Number of Vehicles - Buses | 0 |
| Number of Vehicles - Motorcyles | 0 |

FIELD DATA REPORT

## Description / Photos

| | |
|---|---|
| **Terrain** | *Mixed* |

## Site Photos

| | |
|---|---|
| **Photo** |  |
| **Comments / Description** | *Looking towards 30th Ave.* |

# Appendix H

## Traffic Noise Model Calculations

**Project: 11633 - Santa Cruz Water Rights Project**

**Noise Level Descriptor:** Ldn
**Site Conditions:** Soft
**Traffic Input:** ADT
**Traffic K-Factor:**

| Segment Description and Location | | | | Input | | | | | | | | | | Output | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Distance to Directional Centerline, (feet)[4] | | Traffic Distribution Characteristics | | | | | | Ldn, | Distance to Contour, (feet)[3] | | | |
| Number | Name | From | To | ADT | Speed (mph) | Near | Far | % Auto | % Med | % Hvy | % Day | % Eve | % Night | (dBA)[5,6,7] | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| **Existing Conditions** | | | | | | | | | | | | | | | | | | |
| 1 | Hwy 1 | | | 102,000 | 65 | 100 | 100 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 79.4 | 421 | 908 | 1955 | 4213 |
| 2 | 41st | South of Cory | | 24,232 | 45 | 100 | 100 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 67.8 | 72 | 155 | 333 | 718 |
| 3 | 41st | Portola | SP RR | 13,732 | 25 | 100 | 100 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 59.0 | 19 | 40 | 86 | 186 |
| 4 | Brommer | Bulb Ave | 41st | 6,664 | 25 | 100 | 100 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 55.9 | 11 | 25 | 53 | 115 |
| 5 | Portola | West of 41st | | 16,056 | 25 | 100 | 100 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 59.7 | 21 | 44 | 96 | 206 |
| 6 | Soquel Dr | Rodeo Gulch | 41st | 23,618 | 35 | 100 | 100 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 64.7 | 44 | 95 | 206 | 443 |
| 7 | Hwy 9 | | | 21,900 | 25 | 100 | 100 | 95.0% | 3.6% | 1.4% | 80.0% | | 20.0% | 61.9 | 29 | 62 | 134 | 288 |
| 8 | Hwy 17 | | | 60,100 | 65 | 100 | 100 | 96.9% | 1.5% | 1.6% | 80.0% | | 20.0% | 76.7 | 279 | 602 | 1297 | 2794 |

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

# Appendix H

## Traffic Noise Model Calculations

**Project: 11633 - Santa Cruz Water Rights Project**

**Noise Level Descriptor:** Leq
**Site Conditions:** Soft
**Traffic Input:** ADT
**Traffic K-Factor:** 10

| Segment Description and Location | | | | Input | | | | | | | | | | Output | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Distance to Directional Centerline, (feet)[4] | | Traffic Distribution Characteristics | | | | | | Leq, | Distance to Contour, (feet)[3] | | | |
| Number | Name | From | To | ADT | Speed (mph) | Near | Far | % Auto | % Med | % Hvy | % Day | % Eve | % Night | (dBA)[5,6,7] | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| **Existing Conditions** | | | | | | | | | | | | | | | | | | |
| 1 | Beltz 8 | | | | | | | | | | | | | | | | | |
| 2 | Hwy 1 | | | 102,000 | 65 | 5730 | 5730 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 52.3 | 380 | 819 | 1764 | 3801 |
| 3 | 41st | Portola | SP RR | 13,732 | 25 | 1050 | 1050 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 43.0 | 17 | 36 | 78 | 167 |
| 4 | Brommer | Bulb Ave | 41st | 6,664 | 25 | 1185 | 1185 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 39.1 | 10 | 22 | 48 | 103 |
| 5 | Portola | West of 41st | | 16,056 | 25 | 1200 | 1200 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 42.9 | 19 | 40 | 86 | 186 |
| | | | | | | | | | | | | | | 53.4 | | | | |
| | Beltz 9 | | | | | | | | | | | | | | | | | |
| 6 | Hwy 1 | | | 102,000 | 65 | 7650 | 7650 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 50.4 | 380 | 819 | 1764 | 3801 |
| 7 | 41st | Portola | SP RR | 13,732 | 25 | 2300 | 2300 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 37.9 | 17 | 36 | 78 | 167 |
| 8 | Brommer | Bulb Ave | 41st | 6,664 | 25 | 2750 | 2750 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 33.6 | 10 | 22 | 48 | 103 |
| 9 | Portola | West of 41st | | 16,056 | 25 | 425 | 425 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 49.6 | 19 | 40 | 86 | 186 |
| | | | | | | | | | | | | | | 53.2 | | | | |
| | Beltz 10 | | | | | | | | | | | | | | | | | |
| 10 | Hwy 1 | | | 102,000 | 65 | 5850 | 5850 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 52.2 | 380 | 819 | 1764 | 3801 |
| 11 | 41st | Portola | SP RR | 13,732 | 25 | 1000 | 1000 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 43.4 | 17 | 36 | 78 | 167 |
| 12 | Brommer | Bulb Ave | 41st | 6,664 | 25 | 1250 | 1250 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 38.8 | 10 | 22 | 48 | 103 |
| 13 | Portola | West of 41st | | 16,056 | 25 | 1200 | 1200 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 42.9 | 19 | 40 | 86 | 186 |
| | | | | | | | | | | | | | | 53.3 | | | | |
| | Beltz 12 | | | | | | | | | | | | | | | | | |
| 14 | Hwy 1 | | | 102,000 | 65 | 550 | 550 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 67.6 | 380 | 819 | 1764 | 3801 |
| 15 | 41st | South of Cory | | 24,232 | 45 | 860 | 860 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 53.2 | 65 | 140 | 301 | 648 |
| 16 | Soquel Dr | Rodeo Gulch | 41st | 23,618 | 35 | 1000 | 1000 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 49.0 | 40 | 86 | 185 | 400 |
| | | | | | | | | | | | | | | 67.8 | | | | |

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

# Appendix H

## Traffic Noise Model Calculations

**Project: 11633 - Santa Cruz Water Rights Project**

**Noise Level Descriptor:** Leq
**Site Conditions:** Soft
**Traffic Input:** ADT
**Traffic K-Factor:** 10

| Segment Description and Location | | | | Input | | | | | | | | | | | Output | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Distance to Directional Centerline, (feet)4 | | Traffic Distribution Characteristics | | | | | | | | Distance to Contour, (feet)3 | | | |
| Number | Name | From | To | ADT | Speed (mph) | Near | Far | % Auto | % Med | % Hvy | % Day | % Eve | % Night | | Leq, (dBA)5,6,7 | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| **Existing Conditions** | | | | | | | | | | | | | | | | | | | |
| | Tait | | | | | | | | | | | | | | | | | | |
| 17 | Hwy 1 | | | 102,000 | 65 | 2900 | 2900 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 56.8 | 380 | 819 | 1764 | 3801 |
| 18 | River Road | | | 5,800 | 25 | 190 | 190 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | | 50.4 | 9 | 20 | 44 | 94 |
| | | | | | | | | | | | | | | | 57.7 | | | | |
| | Felton | | | | | | | | | | | | | | | | | | |
| 19 | River Road | | | 8,000 | 25 | 315 | 315 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | | 48.5 | 12 | 25 | 54 | 117 |
| | SVWD Intertie Pipeline | | | | | | | | | | | | | | | | | | |
| 20 | Hwy 1 | | | 102,000 | 65 | 100 | 100 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 78.7 | 380 | 819 | 1764 | 3801 |
| 21 | Hwy 1 | | | 102,000 | 65 | 850 | 850 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 64.8 | 380 | 819 | 1764 | 3801 |
| | SVWD Intertie Pump Station | | | | | | | | | | | | | | | | | | |
| 22 | Hwy 1 | | | 102,000 | 65 | 700 | 700 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 66.0 | 380 | 819 | 1764 | 3801 |
| | Soquel Village Pipeline | | | | | | | | | | | | | | | | | | |
| 23 | Hwy 1 | | | 102,000 | 65 | 330 | 330 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 70.9 | 380 | 819 | 1764 | 3801 |
| 24 | Hwy 1 | | | 102,000 | 65 | 1750 | 1750 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 60.1 | 380 | 819 | 1764 | 3801 |
| 25 | Soquel Dr | Rodeo Gulch | 41st | 23,618 | 35 | 130 | 130 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | | 62.3 | 40 | 86 | 185 | 400 |
| | Park Ave Pipeline | | | | | | | | | | | | | | | | | | |
| 26 | Hwy 1 | | | 102,000 | 65 | 270 | 270 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 72.2 | 380 | 819 | 1764 | 3801 |
| 27 | Hwy 1 | | | 102,000 | 65 | 1850 | 1850 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | | 59.7 | 380 | 819 | 1764 | 3801 |
| 28 | Soquel Dr | Rodeo Gulch | 41st | 23,618 | 35 | 120 | 120 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | | 62.8 | 40 | 86 | 185 | 400 |

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

## Appendix H

### Traffic Noise Model Calculations

**Project: 11633 - Santa Cruz Water Rights Project**

**Noise Level Descriptor:** Leq
**Site Conditions:** Soft
**Traffic Input:** ADT
**Traffic K-Factor:** 10

| Segment Description and Location | | | | Input | | | | | | | | | | Output | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Distance to Directional Centerline, (feet)4 | | Traffic Distribution Characteristics | | | | | | Leq, | Distance to Contour, (feet)3 | | | |
| Number | Name | From | To | ADT | Speed (mph) | Near | Far | % Auto | % Med | % Hvy | % Day | % Eve | % Night | (dBA)5,6,7 | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| **Existing Conditions** | | | | | | | | | | | | | | | | | | |
| | McGregor Pump Station upgrades | | | | | | | | | | | | | | | | | |
| 29 | Hwy 1 | | | 102,000 | 65 | 210 | 210 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 73.9 | 380 | 819 | 1764 | 3801 |
| | Freedom Blvd Pump Station | | | | | | | | | | | | | | | | | |
| 30 | Hwy 1 | | | 102,000 | 65 | 875 | 875 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 64.6 | 380 | 819 | 1764 | 3801 |
| 31 | Freedom Blvd | North of Soquel | | 16,015 | 45 | 150 | 150 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 62.7 | 49 | 106 | 228 | 492 |
| | Valencia Pump Station | | | | | | | | | | | | | | | | | |
| 32 | Hwy 1 | | | 102,000 | 65 | 5700 | 5700 | 94.0% | 3.8% | 2.2% | 80.0% | | 20.0% | 52.4 | 380 | 819 | 1764 | 3801 |
| 33 | Freedom Blvd | North of Soquel | | 16,015 | 45 | 720 | 720 | 97.0% | 2.0% | 1.0% | 80.0% | | 20.0% | 52.5 | 49 | 106 | 228 | 492 |

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Santa Cruz ASR

Mobilization, set up of drilling equipment and conductor casing install

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 472 | 60.0 |
| | 124 | 75.0 |
| | 100 | 77.4 |
| | 150 | 72.9 |
| | 200 | 69.6 |
| | 250 | 67.1 |
| | 300 | 65.1 |
| | 350 | 63.4 |
| | 400 | 61.9 |
| | 450 | 60.6 |
| | 500 | 59.4 |
| | 550 | 58.3 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Grader** | **1** | 85 | 0.4 |
| **Auger Drill Rig** | **1** | 85 | 0.2 |
| **Front End Loader** | **1** | 80 | 0.4 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level [2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Grader** | 81.0 |
| **Auger Drill Rig** | 78.0 |
| **Front End Loader** | 76.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.2 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

# Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Santa Cruz ASR
Pilot borehole drilling

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 465 | 60.0 |
| | 122 | 75.0 |
| | 100 | 77.2 |
| | 150 | 72.7 |
| | 200 | 69.4 |
| | 250 | 66.9 |
| | 300 | 64.9 |
| | 350 | 63.2 |
| | 400 | 61.7 |
| | 450 | 60.4 |
| | 500 | 59.2 |
| | 550 | 58.1 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Auger Drill Rig** | **1** | 85 | 0.2 |
| **Gradall** | **1** | 85 | 0.4 |
| **Pumps** | **1** | 77 | 0.5 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Auger Drill Rig** | 78.0 |
| **Gradall** | 81.0 |
| **Pumps** | 74.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Santa Cruz ASR

Ream (enlarge borehole) + Caliper Survey

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 465 | 60.0 |
| | 122 | 75.0 |
| | 100 | 77.2 |
| | 150 | 72.7 |
| | 200 | 69.4 |
| | 250 | 66.9 |
| | 300 | 64.9 |
| | 350 | 63.2 |
| | 400 | 61.7 |
| | 450 | 60.4 |
| | 500 | 59.2 |
| | 550 | 58.1 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Auger Drill Rig** | **1** | 85 | 0.2 |
| **Gradall** | **1** | 85 | 0.4 |
| **Pumps** | **1** | 77 | 0.5 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Auger Drill Rig** | 78.0 |
| **Gradall** | 81.0 |
| **Pumps** | 74.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.0 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

## Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Santa Cruz ASR
Well Construction (Casing install, gravel pack + Seal)

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 435 | 60.0 |
| | 178 | 70.0 |
| | 100 | 76.5 |
| | 150 | 71.9 |
| | 200 | 68.7 |
| | 250 | 66.2 |
| | 300 | 64.2 |
| | 350 | 62.4 |
| | 400 | 61.0 |
| | 450 | 59.6 |
| | 500 | 58.5 |
| | 550 | 57.4 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Dozer** | **1** | 85 | 0.4 |
| **Front End Loader** | **1** | 80 | 0.4 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Dozer** | 81.0 |
| **Front End Loader** | 76.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 84.3 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Santa Cruz ASR

Well Development (Air Lift + Swab)

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 400 | 60.0 | **Auger Drill Rig** | **1** | 85 | 0.2 |
| | 164 | 70.0 | **Gradall** | **1** | 85 | 0.4 |
| | 100 | 75.5 | **Pumps** | **1** | 77 | 0.5 |
| | 150 | 71.0 | | | | |
| | 200 | 67.8 | | | | |
| | 250 | 65.3 | | | | |
| | 300 | 63.2 | | | | |
| | 350 | 61.5 | | | | |
| | 400 | 60.0 | | | | |
| | 450 | 58.7 | | | | |
| | 500 | 57.5 | | | | |
| | 550 | 56.4 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Auger Drill Rig** | 78.0 |
| **Gradall** | 81.0 |
| **Pumps** | 74.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 83.3 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Santa Cruz ASR
Well Development (Test Pump Install, Pumping)

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 410 | 60.0 |
| | 168 | 70.0 |
| | 100 | 75.9 |
| | 150 | 71.3 |
| | 200 | 68.1 |
| | 250 | 65.6 |
| | 300 | 63.5 |
| | 350 | 61.8 |
| | 400 | 60.3 |
| | 450 | 59.0 |
| | 500 | 57.8 |
| | 550 | 56.7 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Generator** | **1** | 82 | 0.5 |
| **Gradall** | **1** | 85 | 0.4 |
| **Pumps** | **1** | 77 | 0.5 |

| | |
|---|---|
| Ground Type | Soft |
| Source Height | 5 |
| Receiver Height | 5 |
| Ground Factor | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Generator** | 79.0 |
| **Gradall** | 81.0 |
| **Pumps** | 74.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 83.6 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

## Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Santa Cruz ASR
Well Testing (step plus constant rate tests)

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 410 | 60.0 | **Generator** | **1** | 82 | 0.5 |
| | 168 | 70.0 | **Gradall** | **1** | 85 | 0.4 |
| | 100 | 75.9 | **Pumps** | **1** | 77 | 0.5 |
| | 150 | 71.3 | | | | |
| | 200 | 68.1 | | | | |
| | 250 | 65.6 | | | | |
| | 300 | 63.5 | | | | |
| | 350 | 61.8 | | | | |
| | 400 | 60.3 | | | | |
| | 450 | 59.0 | | | | |
| | 500 | 57.8 | | | | |
| | 550 | 56.7 | | | | |

| | |
|---|---|
| Ground Type | Soft |
| Source Height | 5 |
| Receiver Height | 5 |
| Ground Factor | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Generator** | 79.0 |
| **Gradall** | 81.0 |
| **Pumps** | 74.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 83.6 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Santa Cruz ASR

Test Pump Removal, well alignment and video survey. Demobilization of Well Drilling equipment

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 465 | 60.0 | **Crane** | **1** | 85 | 0.16 |
| | 122 | 75.0 | **Gradall** | **1** | 85 | 0.4 |
| | 100 | 77.2 | **Front End Loader** | **1** | 80 | 0.4 |
| | 150 | 72.7 | **Tractor** | **1** | 84 | 0.4 |
| | 200 | 69.5 | | | | |
| | 250 | 67.0 | | | | |
| | 300 | 64.9 | | | | |
| | 350 | 63.2 | | | | |
| | 400 | 61.7 | | | | |
| | 450 | 60.4 | | | | |
| | 500 | 59.2 | | | | |
| | 550 | 58.1 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Crane** | 77.0 |
| **Gradall** | 81.0 |
| **Front End Loader** | 76.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.0 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Santa Cruz ASR

Mobilization, set up of drilling equipment and conductor casing install

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 472 | 58.4 |
| | 124 | 73.4 |
| | 100 | 75.8 |
| | 150 | 71.2 |
| | 200 | 68.0 |
| | 250 | 65.5 |
| | 300 | 63.5 |
| | 350 | 61.7 |
| | 400 | 60.2 |
| | 450 | 58.9 |
| | 500 | 57.7 |
| | 550 | 56.7 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Grader** | **1** | 85 | 0.4 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level [2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Grader** | 81.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 83.6 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Santa Cruz ASR

Injection line, Backflow and Meter Install, Electrical Conduit and control Installation, Storm Drain Line Connection

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 590 | 60.0 |
| | 240 | 70.0 |
| | 100 | 79.9 |
| | 150 | 75.3 |
| | 200 | 72.1 |
| | 250 | 69.6 |
| | 300 | 67.5 |
| | 350 | 65.8 |
| | 400 | 64.3 |
| | 450 | 63.0 |
| | 500 | 61.8 |
| | 550 | 60.7 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Concrete Saw** | **1** | 90 | 0.2 |
| **Excavator** | **1** | 85 | 0.4 |
| **Gradall** | **1** | 85 | 0.4 |
| **Pumps** | **1** | 77 | 0.5 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Concrete Saw** | 83.0 |
| **Excavator** | 81.0 |
| **Gradall** | 81.0 |
| **Pumps** | 74.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 87.6 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Intertie

Pipeline Installation

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 485 | 60.0 | **Grader** | **1** | 85 | 0.4 |
| | 127 | 75.0 | **Excavator** | **1** | 85 | 0.4 |
| | 100 | 77.7 | **Tractor** | **1** | 84 | 0.4 |
| | 150 | 73.2 | | | | |
| | 200 | 69.9 | | | | |
| | 250 | 67.4 | | | | |
| | 300 | 65.4 | | | | |
| | 350 | 63.7 | **Ground Type** | | Soft | |
| | 400 | 62.2 | **Source Height** | | 5 | |
| | 450 | 60.9 | **Receiver Height** | | 5 | |
| | 500 | 59.7 | **Ground Factor** | | 0.58 | |
| | 550 | 58.6 | | | | |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Grader** | 81.0 |
| **Excavator** | 81.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.5 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

# Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Intertie
Paving

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 500 | 60.0 | **Paver** | **1** | 85 | 0.5 |
| | 131 | 75.0 | **Paver** | **1** | 85 | 0.5 |
| | 100 | 78.0 | **Roller** | **1** | 85 | 0.2 |
| | 150 | 73.5 | | | | |
| | 200 | 70.3 | | | | |
| | 250 | 67.7 | | | | |
| | 300 | 65.7 | | | | |
| | 350 | 64.0 | | | | |
| | 400 | 62.5 | | | | |
| | 450 | 61.2 | | | | |
| | 500 | 60.0 | | | | |
| | 550 | 58.9 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Paver** | 82.0 |
| **Paver** | 82.0 |
| **Roller** | 78.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.8 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Intertie Pumpstation

Site Preparation

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 470 | 60.0 | **Dozer** | **1** | 85 | 0.4 |
| | 193 | 70.0 | **Tractor** | **1** | 84 | 0.4 |
| | 100 | 77.4 | **Tractor** | **1** | 84 | 0.4 |
| | 150 | 72.8 | | | | |
| | 200 | 69.6 | | | | |
| | 250 | 67.1 | | | | |
| | 300 | 65.1 | | | | |
| | 350 | 63.3 | | | | |
| | 400 | 61.8 | | | | |
| | 450 | 60.5 | | | | |
| | 500 | 59.3 | | | | |
| | 550 | 58.3 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Dozer** | 81.0 |
| **Tractor** | 80.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.2 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Intertie Pumpstation

Building Construction

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 518 | 60.0 |
| | 136 | 75.0 |
| | 100 | 78.4 |
| | 150 | 73.9 |
| | 200 | 70.7 |
| | 250 | 68.2 |
| | 300 | 66.1 |
| | 350 | 64.4 |
| | 400 | 62.9 |
| | 450 | 61.6 |
| | 500 | 60.4 |
| | 550 | 59.3 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Man Lift** | **1** | 85 | 0.2 |
| **Concrete Mixer Truck** | **1** | 85 | 0.4 |
| **Gradall** | **1** | 85 | 0.4 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level [2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Man Lift** | 78.0 |
| **Concrete Mixer Truck** | 81.0 |
| **Gradall** | 81.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 86.2 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

## Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Intertie Pumpstation
Architectural Coating

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 208 | 60.0 |
| | 85.5 | 70.0 |
| | 100 | 68.2 |
| | 150 | 63.7 |
| | 200 | 60.5 |
| | 250 | 58.0 |
| | 300 | 55.9 |
| | 350 | 54.2 |
| | 400 | 52.7 |
| | 450 | 51.4 |
| | 500 | 50.2 |
| | 550 | 49.1 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Compressor (air)** | **1** | 80 | 0.4 |

| | |
|---|---|
| Ground Type | Soft |
| Source Height | 5 |
| Receiver Height | 5 |
| Ground Factor | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Compressor (air)** | 76.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 76.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

# Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Intertie Pumpstation
Paving

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 355 | 60.0 | **Paver** | **1** | 85 | 0.5 |
| | 146 | 70.0 | | | | |
| | 100 | 74.2 | | | | |
| | 150 | 69.7 | | | | |
| | 200 | 66.4 | | | | |
| | 250 | 63.9 | | | | |
| | 300 | 61.9 | | | | |
| | 350 | 60.2 | **Ground Type** | | Soft | |
| | 400 | 58.7 | **Source Height** | | 5 | |
| | 450 | 57.4 | **Receiver Height** | | 5 | |
| | 500 | 56.2 | **Ground Factor** | | 0.58 | |
| | 550 | 55.1 | | | | |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Paver** | 82.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 82.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

## Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Intertie Pumpstation
Testing

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 272 | 60.0 | **Generator** | **1** | 82 | 0.5 |
| | 111 | 70.0 | | | | |
| | 100 | 71.2 | | | | |
| | 150 | 66.7 | | | | |
| | 200 | 63.4 | | | | |
| | 250 | 60.9 | | | | |
| | 300 | 58.9 | | | | |
| | 350 | 57.2 | **Ground Type** | | Soft | |
| | 400 | 55.7 | **Source Height** | | 5 | |
| | 450 | 54.4 | **Receiver Height** | | 5 | |
| | 500 | 53.2 | **Ground Factor** | | 0.58 | |
| | 550 | 52.1 | | | | |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Generator** | 79.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 79.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Intertie Pumpstation Upgrade

Demolition (removal/replacement of equipment)

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 470 | 58.9 |
| | 193 | 68.9 |
| | 100 | 76.2 |
| | 150 | 71.7 |
| | 200 | 68.5 |
| | 250 | 66.0 |
| | 300 | 63.9 |
| | 350 | 62.2 |
| | 400 | 60.7 |
| | 450 | 59.4 |
| | 500 | 58.2 |
| | 550 | 57.1 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Excavator** | **1** | 85 | 0.4 |
| **Pumps** | **1** | 77 | 0.5 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level [2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Excavator** | 81.0 |
| **Pumps** | 74.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 84.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

# Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Intertie Pumpstation Upgrade
Structural Rehabilitation

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 518 | 58.1 | **Compressor (air)** | **1** | 80 | 0.4 |
| | 136 | 73.1 | **Concrete Mixer Truck** | **1** | 85 | 0.4 |
| | 100 | 76.6 | **Generator** | **1** | 82 | 0.5 |
| | 150 | 72.0 | **Pumps** | **1** | 77 | 0.5 |
| | 200 | 68.8 | | | | |
| | 250 | 66.3 | | | | |
| | 300 | 64.2 | | | | |
| | 350 | 62.5 | | | | |
| | 400 | 61.0 | | | | |
| | 450 | 59.7 | | | | |
| | 500 | 58.5 | | | | |
| | 550 | 57.4 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Compressor (air)** | 76.0 |
| **Concrete Mixer Truck** | 81.0 |
| **Generator** | 79.0 |
| **Pumps** | 74.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 84.3 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Intertie Pumpstation Upgrade

Building Construction

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 510 | 60.0 |
| | 134 | 75.0 |
| | 100 | 78.3 |
| | 150 | 73.7 |
| | 200 | 70.5 |
| | 250 | 68.0 |
| | 300 | 65.9 |
| | 350 | 64.2 |
| | 400 | 62.7 |
| | 450 | 61.4 |
| | 500 | 60.2 |
| | 550 | 59.1 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Tractor** | **1** | 84 | 0.4 |
| **Generator** | **1** | 82 | 0.5 |
| **Paver** | **1** | 85 | 0.5 |
| **Man Lift** | **1** | 85 | 0.2 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Tractor** | 80.0 |
| **Generator** | 79.0 |
| **Paver** | 82.0 |
| **Man Lift** | 78.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 86.0 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Intertie Pumpstation Upgrade

Testing

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 272 | 60.0 | **Generator** | **1** | 82 | 0.5 |
| | 111 | 70.0 | | | | |
| | 100 | 71.2 | | | | |
| | 150 | 66.7 | | | | |
| | 200 | 63.4 | | | | |
| | 250 | 60.9 | | | | |
| | 300 | 58.9 | | | | |
| | 350 | 57.2 | **Ground Type** | | Soft | |
| | 400 | 55.7 | **Source Height** | | 5 | |
| | 450 | 54.4 | **Receiver Height** | | 5 | |
| | 500 | 53.2 | **Ground Factor** | | 0.58 | |
| | 550 | 52.1 | | | | |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Generator** | 79.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 79.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Tait Diversion Improvements

Site Preparation

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 500 | 60.0 |
| | 131 | 75.0 |
| | 100 | 78.0 |
| | 150 | 73.5 |
| | 200 | 70.2 |
| | 250 | 67.7 |
| | 300 | 65.7 |
| | 350 | 64.0 |
| | 400 | 62.5 |
| | 450 | 61.1 |
| | 500 | 60.0 |
| | 550 | 58.9 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Excavator** | **1** | 85 | 0.4 |
| **Grader** | **1** | 85 | 0.4 |
| **Pumps** | **1** | 77 | 0.5 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level [2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Excavator** | 81.0 |
| **Grader** | 81.0 |
| **Pumps** | 74.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.8 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Tait Diversion Improvements

Intake Design Upgrade

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 500 | 58.9 |
| | 131 | 73.9 |
| | 100 | 76.9 |
| | 150 | 72.4 |
| | 200 | 69.2 |
| | 250 | 66.7 |
| | 300 | 64.6 |
| | 350 | 62.9 |
| | 400 | 61.4 |
| | 450 | 60.1 |
| | 500 | 58.9 |
| | 550 | 57.8 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Crane** | **1** | 85 | 0.16 |
| **Generator** | **1** | 82 | 0.5 |
| **Concrete Mixer Truck** | **1** | 85 | 0.4 |
| **Compressor (air)** | **1** | 80 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Crane** | 77.0 |
| **Generator** | 79.0 |
| **Concrete Mixer Truck** | 81.0 |
| **Compressor (air)** | 76.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 84.7 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Tait Diversion Improvements

Hydraulic Modifications

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 470 | 60.1 |
| | 193 | 70.1 |
| | 100 | 77.4 |
| | 150 | 72.9 |
| | 200 | 69.7 |
| | 250 | 67.2 |
| | 300 | 65.1 |
| | 350 | 63.4 |
| | 400 | 61.9 |
| | 450 | 60.6 |
| | 500 | 59.4 |
| | 550 | 58.3 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Excavator** | **1** | 85 | 0.4 |
| **Generator** | **1** | 82 | 0.5 |
| **Pumps** | **1** | 77 | 0.5 |
| **Tractor** | **1** | 84 | 0.4 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Excavator** | 81.0 |
| **Generator** | 79.0 |
| **Pumps** | 74.0 |
| **Tractor** | 80.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.2 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

# Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Tait Diversion Improvements

Improvments to Check Dam

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 518 | 58.9 | **Concrete Mixer Truck** | **1** | 85 | 0.4 |
| | 136 | 73.9 | **Concrete Pump Truck** | **1** | 82 | 0.2 |
| | 100 | 77.3 | **Compressor (air)** | **1** | 80 | 0.4 |
| | 150 | 72.8 | **Excavator** | **1** | 85 | 0.4 |
| | 200 | 69.6 | | | | |
| | 250 | 67.1 | | | | |
| | 300 | 65.0 | | | | |
| | 350 | 63.3 | | | | |
| | 400 | 61.8 | | | | |
| | 450 | 60.5 | | | | |
| | 500 | 59.3 | | | | |
| | 550 | 58.2 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Concrete Mixer Truck** | 81.0 |
| **Concrete Pump Truck** | 75.0 |
| **Compressor (air)** | 76.0 |
| **Excavator** | 81.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.1 |

Sources:

1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.

2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.

$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects; and

D = Distance from source to receiver.

*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Tait Diversion Improvements

Fish Passage Upgrades

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) |
|---|---|---|
| Threshold* | 475 | 60.0 |
| | 124 | 75.0 |
| | 100 | 77.4 |
| | 150 | 72.9 |
| | 200 | 69.7 |
| | 250 | 67.2 |
| | 300 | 65.1 |
| | 350 | 63.4 |
| | 400 | 61.9 |
| | 450 | 60.6 |
| | 500 | 59.4 |
| | 550 | 58.3 |

| Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|
| **Excavator** | **1** | 85 | 0.4 |
| **Tractor** | **1** | 84 | 0.4 |
| **Generator** | **1** | 82 | 0.5 |
| **Pumps** | **1** | 77 | 0.5 |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Excavator** | 81.0 |
| **Tractor** | 80.0 |
| **Generator** | 79.0 |
| **Pumps** | 74.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 85.2 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

## Appendix H

## Project-Generated Construction Source Noise Prediction Model

## SCWRP - Tait Diversion Improvements

Site CleanupTesting

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 355 | 59.0 | **Excavator** | **1** | 85 | 0.4 |
| | 146 | 69.0 | | | | |
| | 100 | 73.2 | | | | |
| | 150 | 68.7 | | | | |
| | 200 | 65.5 | | | | |
| | 250 | 63.0 | | | | |
| | 300 | 60.9 | | | | |
| | 350 | 59.2 | | | | |
| | 400 | 57.7 | | | | |
| | 450 | 56.4 | | | | |
| | 500 | 55.2 | | | | |
| | 550 | 54.1 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **Excavator** | 81.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 81.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

# Appendix H
## Project-Generated Construction Source Noise Prediction Model
## SCWRP - Tait Diversion Improvements
Site CleanupTesting

| Location | Distance to Nearest Receiver in feet | Combined Predicted Noise Level ($L_{eq}$ dBA) | Equipment Assumptions | Qty. | Reference Emission Noise Levels (Lmax) at 50 feet[1] | Usage Factor[1] |
|---|---|---|---|---|---|---|
| Threshold* | 25 | 85.8 | **auger drill rig** | **1** | 85 | 0.2 |
| | 146 | 66.0 | | | | |
| | 100 | 70.2 | | | | |
| | 150 | 65.7 | | | | |
| | 200 | 62.5 | | | | |
| | 250 | 60.0 | | | | |
| | 300 | 57.9 | | | | |
| | 350 | 56.2 | | | | |
| | 400 | 54.7 | | | | |
| | 450 | 53.4 | | | | |
| | 500 | 52.2 | | | | |
| | 550 | 51.1 | | | | |

| | |
|---|---|
| **Ground Type** | Soft |
| **Source Height** | 5 |
| **Receiver Height** | 5 |
| **Ground Factor** | 0.58 |

| Predicted Noise Level[2] | $L_{eq}$ dBA at 50 feet[2] |
|---|---|
| **auger drill rig** | 78.0 |

| Predicted Combined Noise Level ($L_{eq}$ dBA at 50 feet) |
|---|
| 78.0 |

Sources:
1 - Obtained from the FHWA Roadway Construction Noise Model, January 2006.
2 - Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006.
$L_{eq}$(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)
Where: E.L. = Emission Level;
U.F.= Usage Factor;
G = Constant that accounts for topography and ground effects; and
D = Distance from source to receiver.
*Project specific threshold

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