



## MITIGATED NEGATIVE DECLARATION

*Date of Issuance*

*of PMND:* October 29, 2025, amended on March 18, 2026, (amendments to the initial study are shown as deletions in ~~striketrough~~ and additions in double underline)

*Case No.:* **2023-005928ENV**

*Project Title:* **Westside Potable Emergency Firefighting Water System**

*BPA Nos.:* Not applicable

*Zoning:* Public right-of-way and P - Public Use Districts  
OS – Open Space Height and Bulk District

*Block/Lot:* Various (primarily within streets and not within block/lots); also 7283/004, 7206/001, 2107/001

*Lot Size:* Lake Merced Pump Station lot - 88,686 square feet; Central Pump Station/Merced Manor Reservoir lot - 213,640 square feet; Sunset Reservoir lot - 1,497,597 square feet

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### Project Description

The proposed Westside Potable Emergency Firefighting Water System project (project) would add a dual-purpose, earthquake-resistant high-pressure water transmission pipeline within existing public right-of-way to provide both fire protection and redundancy for potable water conveyance to western San Francisco. The project would include installation of approximately 16 miles of belowground pipeline and associated appurtenances (such as valves, vaults, and manholes) as well as aboveground cabinets and fire hydrants. In addition, improvements would be installed at existing SFPUC facilities as follows: 1) pump station upgrades at the Lake Merced Pump Station; and 2) two new emergency pump stations, one at the existing Central Pump Station/Merced Manor facility and one at the Sunset Reservoir facility. The project would be designed and constructed in phases, with construction over approximately 15 years from 2026 through 2040.

The project would extend through the Outer Richmond, Outer Sunset, and Parkside neighborhoods, and part of the Lakeshore neighborhood – generally from Lake Merced in the south to Lincoln Park and the Presidio in the north, generally bounded by Park Presidio Boulevard and 19th Avenue (also referred to as State Route 1) on the east and the Great Highway on the west.

## Finding

This project could not have a significant effect on the environment. This finding is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15064 (Determining Significant Effect), 15065 (Mandatory Findings of Significance), and 15070 (Decision to prepare a Negative Declaration), and the following reasons as documented in the Initial Evaluation (Initial Study) for the project, which is attached.

Mitigation measures are included in this project to avoid potentially significant effects. See pages 66, 67, 72, 76, 78, 84, 107, 113, 117, and 171 ~~66, 67, 71, 76, 78, 83, 105, 111, 115, and 169.~~

In the independent judgment of the planning department, there is no substantial evidence that the project could have a significant effect on the environment.



Lisa Gibson  
Environmental Review Officer

4/21/2026

Date of Issuance of Final Mitigated  
Negative Declaration

cc: Supervisor Connie Chan, District 1  
Supervisor Alan Wong, District 4  
Supervisor Myrna Melgar, District 7



# **INITIAL STUDY**

## **WESTSIDE POTABLE EMERGENCY FIREFIGHTING WATER SYSTEM**

### **PLANNING DEPARTMENT CASE NO. 2023-005928ENV**

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## Acronyms

|                                |                                                                                  |
|--------------------------------|----------------------------------------------------------------------------------|
| 2050 Planning Study            | SFPUC's Emergency Firefighting Water System 2050 Planning Study                  |
| ADRP                           | Archeological Data Recovery Plan                                                 |
| AMP                            | Archeological Monitoring Plan                                                    |
| AMTRR                          | Archeological Monitoring or Testing Result Report                                |
| ARPP                           | Archeological Resource Preservation Plan                                         |
| ARR                            | Archeological Resources Report                                                   |
| ATP                            | Archeological Testing Plan                                                       |
| CalEEMod                       | California Emissions Estimator Model                                             |
| California Register            | California Register of Historic Resources                                        |
| Cal OSHA                       | California Occupational Safety and Health Administration                         |
| CCSF or city                   | City and County of San Francisco                                                 |
| CEQA                           | California Environmental Quality Act                                             |
| CO                             | carbon monoxide                                                                  |
| COVID-19                       | novel coronavirus 2019 disease                                                   |
| dBA                            | A-weighted sound level                                                           |
| EPA                            | United States Environmental Protection Agency                                    |
| ERO                            | Environmental Review Officer                                                     |
| General Plan                   | San Francisco General Plan                                                       |
| GHG                            | greenhouse gas                                                                   |
| lb/day                         | pounds per day                                                                   |
| $L_{dn}$                       | Day-Night Average Sound Level                                                    |
| $L_{eq}$                       | energy equivalent level                                                          |
| MLD                            | Most Likely Descendant                                                           |
| $NO_2$                         | nitrogen dioxide                                                                 |
| $NO_x$                         | oxides of nitrogen                                                               |
| NWIC                           | California Historical Resources Information System, Northwest Information Center |
| PCBs                           | Polychlorinated Biphenyls                                                        |
| PG&E                           | Pacific Gas and Electric                                                         |
| PM                             | particulate matter                                                               |
| $PM_{2.5/10}$                  | particulate matter                                                               |
| PPV                            | peak particle velocity                                                           |
| ROG                            | reactive organic gases                                                           |
| SFMTA or Transportation Agency | San Francisco Municipal Transportation Agency                                    |
| SFPUC                          | San Francisco Public Utilities Commission                                        |
| $SO_2$                         | sulfur dioxide                                                                   |
| State water board              | State Water Resources Control Board                                              |
| TCRPIP                         | Tribal Cultural Resources Public Interpretation Plan                             |
| TCRPP                          | Tribal Cultural Resource Preservation Plan                                       |
| TPC                            | Tournament Players Club                                                          |
| $\mu g/m^3$                    | micrograms per cubic meter                                                       |

## A. Project Description

### Overview

The San Francisco Public Utilities Commission (SFPUC) proposes to implement the Westside Potable Emergency Firefighting Water System (proposed project or project), which would add a dual-purpose, earthquake-resistant high-pressure water transmission pipeline within the public right-of-way to provide both fire protection and redundancy for potable (i.e., drinking) water conveyance to western San Francisco. The project would install approximately 16 miles of belowground pipeline and associated appurtenances (such as valves, vaults, and manholes) as well as aboveground cabinets and fire hydrants. In addition, the project would install improvements at existing SFPUC facilities as follows: 1) pump station upgrades at the Lake Merced Pump Station and 2) two new emergency pump stations to boost water pressure: pump station 1 at the existing Central Pump Station/Merced Manor Reservoir facility and pump station 2 at the existing Sunset Reservoir facility (referred to as pump station 1 and pump station 2, respectively). The project would be designed and constructed in phases, with construction over approximately 15 years from 2026 through 2040.<sup>1,2</sup>

The project would be designed to operate primarily as a potable system, meaning it would convey low-pressure potable water and would connect to the municipal water supply distribution system during normal operations, serving as a seismically reliable addition to the existing system. However, after a major earthquake or under other emergency conditions, the project pipelines would be isolated from the existing potable supply with automatic valves and would operate under high pressure for firefighting. The system would be designed to withstand a major earthquake.<sup>3</sup> The project would provide a more reliable firefighting system for the western portion of the city using existing water supplies.

### Background

The SFPUC is responsible for operation and maintenance of the City's existing emergency firefighting water system and is working in partnership with the San Francisco Fire Department and San Francisco Public Works to improve the system. The Earthquake Safety and Emergency Response Bonds approved by the voters in 2010, 2014, and 2020 provided the City with funds to plan, design, and construct projects to enhance the reliability of the emergency firefighting water system. Furthermore, the SFPUC's Emergency Firefighting Water System 2050 Planning Study<sup>4</sup> (2050 Planning Study) was developed in response to the San Francisco Board of Supervisors' Resolution 422-19 issued in October 2019. The resolution directed the City to

- 
- 1 The pipeline segment along 19th Avenue from Sloat Boulevard to Vicente Street was installed as part of SFPUC's 19th Avenue Water Main Replacement Project (Planning Case No. 2015-004783ENV) and the segment along Vicente Street from 19th Avenue to 25th Avenue was installed as part of the SFPUC's Wawona Area Stormwater Improvement and Vicente Street Water Main Replacement Project (Planning Case No. 2020-002636ENV). This document, and all other documents referenced in this MND unless otherwise noted, are available for review at <https://tinyurl.com/WPEFWS> and at the San Francisco Planning Department, 49 South Van Ness, Suite 1400 as part of Case File No. 2023-005928ENV.
  - 2 Construction by 2040 is a conservative timeline and the actual construction schedule would depend upon availability of funding through future voter-approved bond funding such as the Earthquake Safety and Emergency Response General Obligation Bond and may extend beyond 2040.
  - 3 SFPUC, Potable Emergency Firefighting Water System Pipeline – Contracts A and B, Draft Conceptual Engineering Report Welded Steel Pipe, April 2025.
  - 4 SFPUC, Auxiliary Water Supply System, Potable Emergency Firefighting Water System Pipeline, Segment A, 65 Percent Submittal, August 2024.
  - 4 AECOM, San Francisco Public Utilities Commission Emergency Firefighting Water System 2050 Planning Study, December 2021.

develop a plan to ensure that San Francisco is well prepared to fight fires in all areas within its boundaries during a major seismic event similar in magnitude and impact to the 1906 earthquake.

Currently water for firefighting is supplied from various systems, which are described below:

- Low-pressure hydrants are connected to the potable water system and are located throughout the city.
- The Auxiliary Water Supply System, now referred to as the Emergency Firefighting Water System, is a high-pressure system that is not directly connected to the potable water supply. It consists of 135 miles of resilient pipeline, one reservoir, 230 cisterns, two large capacity tanks, two seawater pumping stations, and Bay water intakes (suction connections). The system has unique capabilities, including the ability to deliver water at the high pressures needed by the fire department to fight large fires. Additionally, water from the Bay can be used as an emergency source for firefighting. In the western part of the city, this system is limited to cisterns. Cisterns are small underground water storage tanks that are not connected to potable supply or the high-pressure system; fire trucks would need to connect directly to a cistern and pump from it for firefighting. Water levels in the cisterns are checked periodically and they are filled manually, usually with water from a nearby low-pressure hydrant. Cisterns would be used during an elevated emergency when other systems fail.<sup>5</sup>
- In the event of a catastrophic emergency resulting in the loss of potable water, non-potable lake water could be pumped from Lake Merced into the low-pressure system and used for firefighting. Lake water would only be used as a last resort and, as of 2025, has never been used.

The 2050 Planning Study recommended constructing a high-pressure, seismically reliable emergency water system in the western and southern areas of the city, relying on multiple water sources. This recommendation informs the project. The project would differ from the existing emergency firefighting water system in that it would be a dual-purpose pipeline system, independent from the existing emergency firefighting water system network that currently primarily serves the eastern portion of San Francisco. Under emergency conditions, the project pipelines would provide a high-pressure firefighting water supply isolated from the low-pressure municipal (potable) water supply system. During normal operations, the project pipelines would be connected to the low-pressure system and would serve to provide redundancy to the existing potable supply transmission lines.

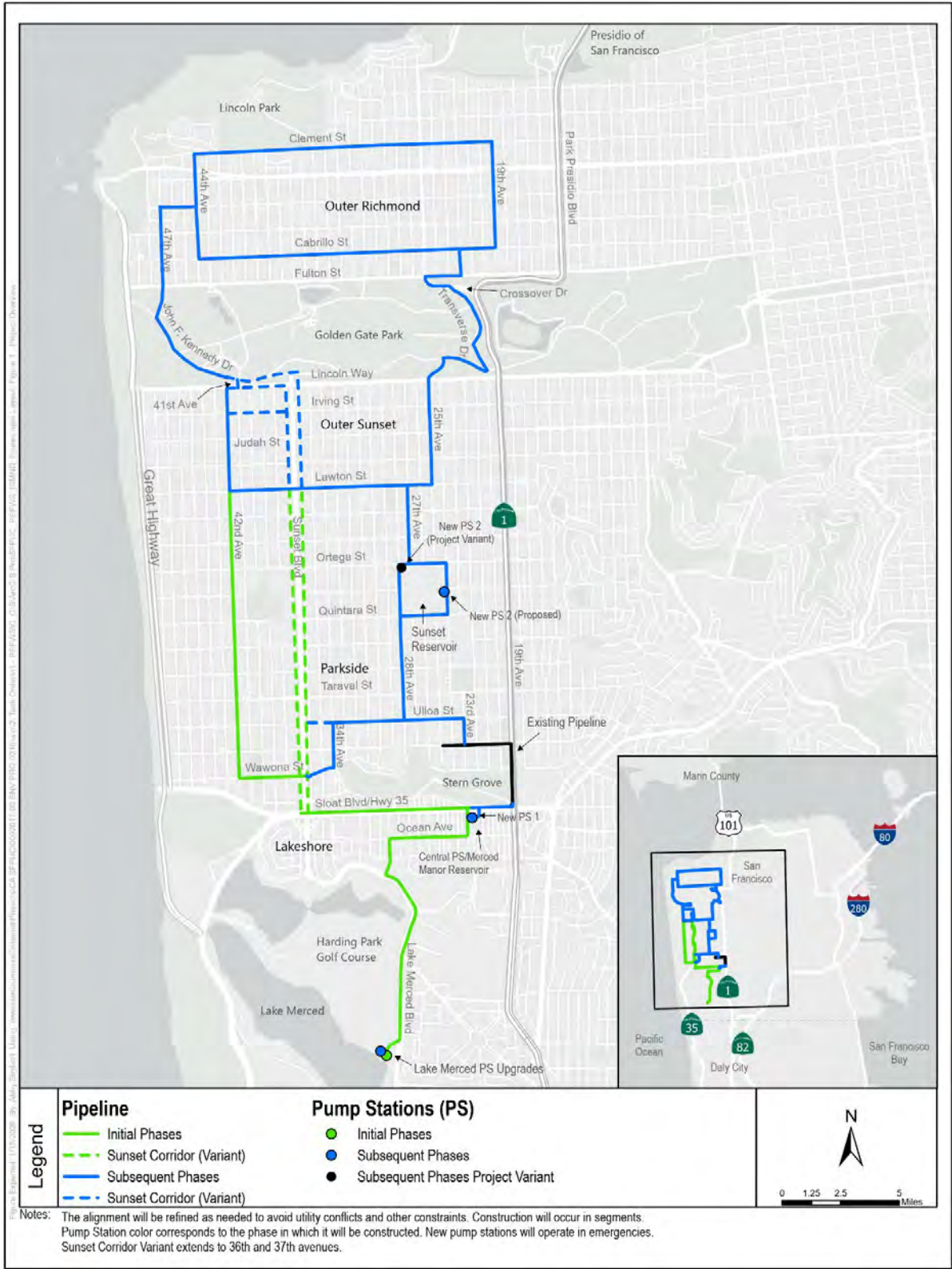
## Project Location

The project would be on the west side of San Francisco, extending from Lake Merced in the south to Lincoln Park and the Presidio in the north, and generally bounded by Park Presidio Boulevard and 19th Avenue (also referred to as State Route 1) on the east and the Great Highway on the west (see [Figure 1](#)). The project would extend through the Outer Richmond, Outer Sunset, and Parkside neighborhoods, and part of the Lakeshore neighborhood.

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<sup>5</sup> Emergency operations are described for both “elevated emergencies” and “catastrophic emergencies.” Elevated emergencies, as defined for the purposes of the scenarios presented in this document, would occur when the existing low-pressure firefighting system may not be adequate to fight fires such as a multi-alarm fire. Catastrophic emergencies, as defined for the purposes of the scenarios presented in this document, could result from a major earthquake and would entail loss of potable water supply and possibly the loss of PG&E power to the pump stations.

Figure 1. Project Location and Phasing (revised)



SOURCE: ESRI, World Topographic Map [base map] accessed August 22, 2024. City and County of San Francisco, DataSF, accessed August 23, 2024.



Most of the project pipelines would be installed in public right-of-way within streets. In addition, pump station improvements and new pump stations would be installed at existing SFPUC facilities at the Lake Merced Pump Station, the existing Central Pump Station/Merced Manor Reservoir, and the Sunset Reservoir, described below.

- The Lake Merced Pump Station at 991 Lake Merced Boulevard, just north of the intersection with Brotherhood Way, is an existing pump station on the southernmost of the three lakes that comprise Lake Merced. Lake Merced is a freshwater lake in the southwestern corner of San Francisco.
- The Central Pump Station is an existing pump station at 2920 23rd Avenue for the low-pressure potable water distribution system located along the north side of the Merced Manor Reservoir. Together the pump station and reservoir occupy the entire block bounded by Sloat Boulevard to the north, 22nd Avenue to the east, Ocean Avenue to the south, and 23rd Avenue to the west.
- The Sunset Reservoir at 1949 24th Avenue/1736 Quintara Street stores potable water and generally occupies several city blocks. It is bordered by Ortega Street on the north, 24th Avenue to the east, Quintara Street on the south, and 28th Avenue to the west.

## Project Components

As described above, the project would include installation of approximately 16 miles of pipeline and associated appurtenances as well as pump station upgrades and two new emergency pump stations at existing SFPUC facilities. The project components are summarized below in [Table 1](#). [Figure 1](#) shows the project alignment and pump stations. Water supply and project phasing are described below, followed by a detailed description of each of the project components.

## CONNECTIONS TO WATER SUPPLY

The initial southernmost pipeline segment would connect to the existing potable water supply that is conveyed to the Lake Merced Pump Station in the southwest part of the city from the peninsula via the Sunset Supply Pipeline. In addition, like the existing system, in a catastrophic emergency, the project pipeline could be connected to Lake Merced, which is designated as an existing non-potable water source for the city. This would allow the system to connect to non-potable water if the potable water supply system is damaged by an earthquake or other catastrophe and if demands on the system exceed potable water supplies, similar to the existing capability of the low-pressure system.

While this capability to switch to non-potable lake water currently exists for the low-pressure water supply system, the project would include improvements to allow this switch to occur more efficiently in response to catastrophic emergencies.<sup>6</sup> However, the project would not increase the capacity of the system to draw lake water and the amount of lake water that could be used by the project would remain the same as existing conditions. The project would include valves that would allow the project pipelines to be isolated from the potable low-pressure distribution system in such emergencies and to become pressurized (i.e., with increased pressure) to fight fires.

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<sup>6</sup> The project would reduce the time to switch from potable to lake water by approximately 5 hours.

**Table 1. Project Components**

| Component and Description (all numbers approximate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pipelines and Appurtenances</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>Pipeline</p> <ul style="list-style-type: none"> <li>16 miles of large-diameter pipeline ranging from 24 to 42 inches in diameter installed belowground within the streets, including replacement of the existing 36-inch-diameter Sutro Pipeline from Lake Merced Pump Station to Central Pump Station and abandonment of the existing Sutro Pipeline.</li> <li>60 manholes along the 36- and 42-inch pipeline. In addition, air release valves, vacuum valves, and blow-off valves that support the operation of the pipe, would be installed along the pipeline alignment.</li> </ul>                                                                                                                                                                                                                                                                        |
| <p>Valves</p> <ul style="list-style-type: none"> <li>Valves installed belowground to 1) connect the proposed pipeline to the existing low-pressure system (i.e., pressure-reducing valves) or 2) isolate segments of the system in case of needed repairs or line breaks (i.e., in-line isolation valves). 65 valves in vaults and 10 direct buried valves (up to 7 feet by 9 feet).</li> <li>Valves may either be automated (i.e., triggered in an earthquake) or manual, requiring an operator to manually close them.</li> </ul>                                                                                                                                                                                                                                                                                                                               |
| <p>Vaults</p> <ul style="list-style-type: none"> <li>40 belowground concrete vaults up to 26 feet long by 28 feet wide by 12 feet deep to house automatic valves and appurtenances.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>Cabinets and Sampling Stations</p> <ul style="list-style-type: none"> <li>55 aboveground utility cabinet sets with remote telemetry units to support automated valves by providing controls power and communications to the valve system. The cabinets would range in size as follows: 43 cabinets, ranging from 3.4 to 6.7 feet long by 2.75 feet wide by 6.5 feet tall; 10 cabinets, 10 feet long by 2.75 feet wide by 5.5 feet tall; and two cabinets, 17.5 feet long by 2.75 feet wide by 6.5 feet tall.</li> <li>Each cabinet would have a 6-inch-tall disc antenna, a power drop cabinet 1.6 feet long by 1 foot wide by 5.25 feet tall, and one remote telemetry unit cabinet ranging from 6 to 9 feet long by 2 feet wide by 6 feet tall.</li> <li>15 aboveground water sampling stations in cabinets 1.5 feet in diameter and 4 feet tall.</li> </ul> |
| <p>Hydrants</p> <ul style="list-style-type: none"> <li>130 high-pressure fire hydrants designed to meet potable drinking water standards and operated in the same manner as the existing emergency firefighting water system hydrants to be installed along the public right-of-way. Trenches for connecting the hydrant laterals to the pipeline would be the same depth as the pipeline.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Pump Stations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Lake Merced Pump Station Upgrades (991 Lake Merced Boulevard)</p> <ul style="list-style-type: none"> <li>Upgrades to pumps, including new discharge valves and new flow meters; upgrades to the lake draw system to decrease the time to switch to lake water; electrical and supervisory control and data acquisition system improvements; and a new generator.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Component and Description (all numbers approximate)                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Emergency pump station 1 at Central Pump Station/Merced Manor Reservoir facility (2920 23rd Avenue)</p> <ul style="list-style-type: none"> <li>New building with an emergency pump station to pressurize the water. The building footprint would be 130 feet long by 40 feet wide (5,200 square feet) by 27 feet tall. New above grade fuel and surge tanks<sup>7</sup> would be constructed adjacent to the building.</li> </ul> |
| <p>Emergency pump station 2 at Sunset Reservoir facility (1949 24th Avenue/1736 Quintara Street)</p> <ul style="list-style-type: none"> <li>New building with an emergency pump station to pressurize the water. The building footprint would be 150 feet long by 75 feet wide (11,250 square feet) by 27 feet tall. New above grade fuel and surge tanks would be constructed adjacent to the building.</li> </ul>                  |

SOURCE: SFPUC, 2024.

During subsequent phases of the project, existing potable water supply from other regional water sources that currently serve the low-pressure system – the San Andreas Pipelines 2 and 3, the Sutro Reservoir, and the Sunset Reservoir – would also be conveyed to the project via connections at the proposed emergency pump stations and at other connections throughout the system. The emergency pump stations would allow the system to be pressurized to fight fires.

## PROJECT PHASING

The project would be funded by both the Earthquake Safety and Emergency Response General Obligation Bonds and the SFPUC Water Capital Improvement Plan bonds. As funding becomes available, the project would be designed and constructed. Approximately eight phases of design and construction are anticipated, with construction occurring in segments along the alignment.

The project would be constructed generally from south to north along the western edge of the proposed alignment, allowing access to the potable supply from the Sunset Supply pipeline at the Lake Merced Pump Station and the non-potable emergency backup supply from Lake Merced. Then the project would be constructed north to south along the eastern edge of the alignment, providing redundancy by connecting the pipeline segments into “loops.”

The initial phases of the project include construction of the pipeline from Lake Merced Pump Station to Central Pump Station/Merced Manor Reservoir facility and then to Lawton Street, as well as initial improvements at the Lake Merced Pump Station. These initial phases of the project are under design and construction is proposed to start in 2026 and be completed in 2031.

The subsequent project phases would entail the design and construction of the remainder of the project, including additional improvements at Lake Merced Pump Station (e.g., new emergency generator) and the new emergency pump stations at Central Pump Station/Merced Manor Reservoir and at Sunset Reservoir. The pipeline alignment would be refined as needed to avoid utility conflicts and other constraints. Construction of these subsequent phases could begin as early as 2028 and be completed by approximately 2040. Construction of pump station 1 at the existing Central Pump Station/Merced Manor Reservoir facility is anticipated to occur over approximately two years between 2030 and 2033 and construction of pump station 2 at the Sunset Reservoir facility is anticipated to occur over approximately 2.5 years from 2038 through 2040. [Table 2](#) shows estimated project phasing, although dates are subject to change depending on funding.

<sup>7</sup> A tank connected to a water system used to neutralize sudden changes of pressure in the flow by filling when the pressure increases and emptying when it drops.



Project funding is currently available for the initial phases and a portion of the subsequent phases of the pipeline to Lawton Street.

**Table 2. Estimated Project Phasing**

| Project Phase                                                                                                                        | 2026-<br>2027 | 2028-<br>2029 | 2030-<br>2031 | 2032-<br>2033 | 2034-<br>2035 | 2036-<br>2037 | 2038-<br>2039 | 2040 |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------|
| <b>Initial Phases</b>                                                                                                                |               |               |               |               |               |               |               |      |
| Two pipeline segments (from Lake Merced Pump Station to Central Pump Station/Merced Manor Reservoir Facility, then to Lawton Street) |               |               |               |               |               |               |               |      |
| Lake Merced Pump Station Upgrades (initial upgrades)                                                                                 |               |               |               |               |               |               |               |      |
| <b>Subsequent Phases</b>                                                                                                             |               |               |               |               |               |               |               |      |
| Six pipeline segments (remainder of the project alignment)                                                                           |               |               |               |               |               |               |               |      |
| New emergency pump station 1 at Central Pump Station/Merced Manor facility                                                           |               |               |               |               |               |               |               |      |
| Lake Merced Pump Station Upgrades (emergency generator)                                                                              |               |               |               |               |               |               |               |      |
| New emergency pump station 2 at Sunset Reservoir facility                                                                            |               |               |               |               |               |               |               |      |

Note: Construction by 2040 is a conservative timeline. The actual construction schedule would depend upon availability of funding through future voter-approved bond funding such as the Earthquake Safety and Emergency Response General Obligation Bond and may extend beyond 2040.

## PIPELINES AND APPURTENANCES

Approximately 16 miles of large diameter pipelines, ranging from approximately 24 to 42 inches, would be installed within the street right-of-way. To achieve redundancy, the alignment would ultimately form several “loops.” The alignment would connect to the existing potable and non-potable water supplies at Lake Merced Pump Station and Sunset Reservoir, with two new emergency pumps to increase (i.e., boost) water pressure.

The pipeline would be constructed of earthquake-resistant material including ductile iron pipe (24-inch-diameter) and welded steel pipe (36- or 42-inch-diameter). The pipeline would generally be installed beneath the streets, within the public right-of-way. [Figure 1](#) above illustrates the approximate alignment of the pipeline and the specific streets are listed in [Table 3](#). and [Table 4](#).

As the design of the project progresses, the alignment would be refined as needed to avoid utility conflicts and other constraints. From the Lake Merced Pump Station to Central Pump Station, the proposed pipeline would replace the existing 36-inch Sutro Pipeline. The Sutro Pipeline would be abandoned in place along this segment of the alignment.

The SFPUC is evaluating an alternative project alignment to the Wawona Street/42nd Avenue alignment. This alternative, the Sunset Boulevard corridor project variant (or Sunset corridor variant), would be a corridor along 36th Avenue, Sunset Boulevard, and/or 37th Avenue from Sloat Boulevard, Wawona Street, or Ulloa Street north to either Irving Street, Lincoln Way, and/or Martin Luther King Junior Drive. The alignment may

extend down one or several of these streets and then connect to ~~42nd~~ 41st Avenue and/or Martin Luther King Junior Drive (as shown in [Figure 1](#)). The SFPUC is studying the benefits of this alternative alignment, and a route would be selected based on several factors including effectiveness of fire mitigation, operability, and constructability, i.e., avoiding conflicts with existing utilities and traffic. The analysis of impacts considers all alignment options, including this variant.

Cathodic protection would be used to prevent the corrosion of the metal pipelines. Cathodic protection would entail linings and coatings applied to the pipelines, galvanic anode beds installed below the pipelines, and casing insulators at trench crossings, with test station boxes installed to monitor joints. An anode bed is a series of electrodes installed in an electrolytic environment to provide protection against corrosion by serving as an electrolytic cell component. The anode beds would be installed up to 10 feet below the pipe approximately every 2,500 feet at regular intervals, generally under the pipe.

There would be approximately 60 manholes located along the 36-inch and 42-inch pipelines. Manholes would be approximately 24 inches in diameter. The manhole access point would be housed in a 5-foot-diameter concrete manhole riser that would extend from the top of pipe to the ground surface. The manhole cover and frame would be cast iron, which would be flush with the ground and designed to withstand traffic loads.

In addition, other pipeline appurtenances, such as air release valves, vacuum valves, and blow-off valves, that support the operation of the pipe, would be installed along the pipeline alignment. These elements would be at or below grade except for large air valves. Enclosures for large air valves, which would be approximately 2 feet in diameter and extend to approximately 3 to 4 feet tall, would be installed adjacent to sidewalks or medians, spaced approximately every 2,000 feet along the pipeline alignment (approximately 42 valves total).

After installation of the pipeline within the street right-of-way, the pavement would be restored per Public Works paving requirements.<sup>8</sup> Curb ramps along the alignment that do not meet current standards would be reconstructed, and the raised bicycle lane medians along Lake Merced Boulevard would be restored in kind.

The existing landscaping and pavement would be restored to their general pre-construction condition. However, in accordance with SFPUC's vegetation management policy<sup>9</sup> trees are not permitted above the pipeline alignment. If street trees are required to be removed for the project, they would be replaced consistent with the City's Urban Forestry Ordinance.

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8 San Francisco Department of Public Works, DPW Order No: 187995 Regulations for Excavating and Restoring Streets in San Francisco, January 29, 2018.

9 SFPUC, Amendment to the Right of Way Integrated Vegetation Management Policy. January 13, 2015.

**Table 3. Proposed Pipeline Alignment – Initial Phases**

| Segment                         | Start                                            | End                            | Approximate Distance            |
|---------------------------------|--------------------------------------------------|--------------------------------|---------------------------------|
| <b>Lake Merced Pump Station</b> | Lake Merced Pump Station                         | Lake Merced Boulevard sidewalk | 575 feet                        |
| <b>Lake Merced Boulevard</b>    | Lake Merced Boulevard sidewalk near Pump Station | Middlefield Drive              | 4,685 feet                      |
| <b>Middlefield Drive</b>        | Lake Merced Boulevard                            | Ocean Avenue                   | 950 feet                        |
| <b>Ocean Avenue</b>             | Middlefield Drive                                | 23rd Avenue                    | 2,030 feet                      |
| <b>23rd Avenue</b>              | Ocean Avenue                                     | Sloat Boulevard                | 745 feet                        |
| <b>Sloat Boulevard</b>          | 37th Avenue                                      | 19th Avenue                    | 4,255 feet                      |
| <b>Wawona Street</b>            | 36th Avenue                                      | 42nd Avenue                    | 1,740 feet                      |
| <b>42nd Avenue <sup>a</sup></b> | Lawton Street                                    | Wawona Street                  | 7,490 feet                      |
|                                 |                                                  | <b>Total Length</b>            | <b>22,470 feet (4.25 miles)</b> |

<sup>a</sup> Note that the Sunset Boulevard corridor project variant would extend from Sloat Boulevard, Wawona Street, or Ulloa Street north to Lawton Street along the corridor streets of 36th Avenue, Sunset Boulevard, and/or 37th Avenue.

Distances shown in the table are approximate for each segment and may not total exactly 16 miles due to rounding.

**Table 4. Proposed Pipeline Alignments – Subsequent Phases**

| Segment                            | Start                  | End                             | Approximate Distance |
|------------------------------------|------------------------|---------------------------------|----------------------|
| <b>Clement Street</b>              | 19th Avenue            | 44th Avenue                     | 7,765 feet           |
| <b>Cabrillo Street</b>             | 19th Avenue            | 44th Avenue                     | 7,730 feet           |
| <b>19th Avenue</b>                 | Clement Street         | Cabrillo Street                 | 2,770 feet           |
| <b>44th Avenue</b>                 | Clement Street         | Cabrillo Street                 | 2,740 feet           |
| <b>Anza Street</b>                 | 44th Avenue            | 47th Avenue                     | 920 feet             |
| <b>47th Avenue</b>                 | Anza St                | John F. Kennedy Drive           | 2,920.5 feet         |
| <b>John F Kennedy Drive</b>        | 47th Avenue            | Bernice Rodgers Way             | 1,100 feet           |
| <b>Bernice Rodgers Way</b>         | John F Kennedy Drive   | Martin Luther King Jr Drive     | 730 feet             |
| <b>Martin Luther King Jr Drive</b> | Bernice Rodgers Way    | Martin Luther King Jr. Drive    | 675.990 feet         |
| <b>Lincoln Way into Golden</b>     | Martin Luther King Jr. | Lincoln Way                     | 275 feet             |
| <b>42nd Avenue <sup>a</sup></b>    | Lincoln Way            | Lawton Street                   | 2,675.745 feet       |
| <b>41st Avenue <sup>a</sup></b>    | Lincoln Way            | Martin Luther King Junior Drive | 215                  |
| <b>Wawona Street</b>               | 36th Avenue            | 34th Avenue                     | 775 feet             |
| <b>34th Avenue</b>                 | Wawona Street          | Ulloa Street                    | 1,170 feet           |
| <b>23rd Avenue</b>                 | Vicente Street         | Ulloa Street                    | 680 feet             |

| Segment                                | Start                                         | End                                        | Approximate Distance                                               |
|----------------------------------------|-----------------------------------------------|--------------------------------------------|--------------------------------------------------------------------|
| <b>Ulloa Street <sup>a</sup></b>       | 34th Avenue                                   | 23rd Avenue                                | 3,410 feet                                                         |
| <b>Lawton Street</b>                   | 42nd Avenue                                   | <del>21st</del> <u>25th</u> Avenue         | <del>6,495</del><br><u>5,270</u> feet                              |
| <b>28th Avenue</b>                     | Ulloa Street                                  | Ortega Street                              | 4,005 feet                                                         |
| <b>24th Avenue</b>                     | Quintara Street                               | Ortega Street                              | 1,340 feet                                                         |
| <b>Quintara Street</b>                 | 28th Avenue                                   | 24th Avenue                                | 1,235 feet                                                         |
| <b>Ortega Street</b>                   | 24th Avenue                                   | 28th Avenue                                | 1,230 feet                                                         |
| <b>Sloat Boulevard</b>                 | 19th Avenue                                   | 23rd Avenue                                | 1,070 feet                                                         |
| <b>27th Avenue</b>                     | Ortega Street                                 | Lawton Street                              | 2,055 feet                                                         |
| <b><del>21st</del> Avenue</b>          | <del>Lawton Street</del>                      | <del>Lincoln Way</del>                     | <del>2,665</del> feet                                              |
| <b>Lincoln Way</b>                     | <del>21st</del> Avenue                        | <del>20th</del> Avenue                     | <del>320</del> feet                                                |
| <b>Golden Gate Park bike path</b>      | Lincoln Way                                   | Martin Luther King Jr Drive                | 205 feet                                                           |
| <b>Transverse Drive</b>                | Golden Gate Park bike path at 20th Avenue and | Golden Gate Park Bike Path Crossover Drive | <del>2,240</del><br><u>2,670</u> feet                              |
| <b><u>25<sup>th</sup> Avenue</u></b>   | <u>Martin Luther King Drive</u>               | <u>Lawton Street</u>                       | <u>3,475</u> feet                                                  |
| <b>Golden Gate Park Bike Path</b>      | Transverse Drive                              | Fulton Street                              | 515 feet                                                           |
| <b><u>Fulton Street</u></b>            | <u>Crossover Drive</u>                        | <u>22nd Street</u>                         | <u>935</u> feet                                                    |
| <b><u>Crossover Drive</u></b>          | <u>Transverse Drive</u>                       | <u>Fulton Street</u>                       | <u>780</u> feet                                                    |
| <b><u>Martin Luther King Drive</u></b> | <u>25th Avenue</u>                            | <u>Transverse Drive</u>                    | <u>1,230</u> feet                                                  |
| <b>22nd Avenue</b>                     | Fulton Street                                 | Cabrillo Street                            | 700 feet                                                           |
|                                        |                                               | <b>Total Length</b>                        | <b>60,540</b><br><b><u>62,585</u> feet</b><br><b>(11.95 miles)</b> |

<sup>a</sup> Note that the Sunset Boulevard corridor project variant route would extend from Lawton Street along the corridor streets of 36th Avenue, Sunset Boulevard, and/or 37th Avenue to either Irving Street (connecting to 42nd Street ~~then to 41st Avenue~~), Lincoln Way (connecting to ~~41st Avenue~~ 42nd Street), or directly to Martin Luther King Jr Drive. The variant would also include Ulloa Street from 24th Avenue to 37th Avenue. Distances are approximate for each segment and may not total exactly 16 miles due to rounding.

## VALVES

Several types of valves would be used throughout the project to allow connections to the existing low-pressure potable water distribution system as well as isolation and pressurization of the proposed high-pressure system in an emergency. Under emergency operations, the project would be separated from the existing low-pressure system via isolation valves, and the system would become a high-pressure system for fighting fires. Approximately 65 automatic valves would be installed within vaults, with one or more valves per vault (described further below), and approximately 10 manual valves would be direct buried (i.e., not placed in a vault).

Pressure-reducing valves would be located at connection points to the existing low-pressure potable water distribution system. These valves would allow flow under normal conditions through the new pipeline as well as increase the reliability of the potable water supply in emergency conditions by providing connections between the two systems. To maintain the integrity of the new system, a limited number of connections to the low-pressure system are anticipated. The pressure-reducing valves would be constructed within belowground vaults, as further described below, and would include seismically activated isolation valves and other appurtenances such as pressure-indicating transmitters, sample taps, isolation valves, and sump pumps.

In-line isolation valves would be located along the pipeline and would allow for certain sections of the pipeline to be isolated from other sections for repair or in case of emergency such as a line break. In-line isolation valves would be located at key locations, such as tees, before or after bends, at connection points to the low-pressure water system, and at connection points to the future emergency pump stations 1 and 2. Two types of in-line isolation valves would be used: automated and manual. Automated valves would be triggered in an earthquake event and would isolate the new high-pressure system from the existing low-pressure system. Automated valves would be installed in belowground vaults. Direct buried manual valves would also be used for isolation of the pipeline; they would be buried below grade and would be accessible via a manhole. Direct buried manual valve sizes would vary based on the pipe dimensions and would range from approximately 4 feet by 5 feet to 7 feet by 9 feet. Direct buried valves would have a 4-to-6-inch riser from the pipe to the street, and a similar size valve cover.

## **VAULTS**

Concrete vaults would be constructed to house the pressure-reducing and automated isolation valves including valve assemblies, pressure protection, and other appurtenances, allowing for maintenance and operation of the valves. The vaults would range in size, from approximately 12 feet wide by 16 feet long by 12 feet deep up to approximately 26 feet wide by 28 feet long by 12 feet deep, depending on the type of valves and pipe sizes. Each vault would be constructed entirely below ground, with a sloped floor and a sump to allow periodical dewatering of the vault. The removable concrete vault roof slabs would be sized to facilitate equipment removal and maintenance tasks.

Approximately 40 vaults are anticipated to be required for the project. The vaults would generally be installed at tee connections in the pipeline, at the end of every segment or phase of the pipeline that is constructed, before the pipeline enters and after it exits Golden Gate Park, and at the low-pressure distribution system emergency isolation points along the alignment.

## **CABINETS AND SAMPLING STATIONS**

Approximately 55 utility cabinet sets would be installed along the sidewalk at the location of pressure reducing valves and automated isolation valves to house the battery backup, communications, power connection, and control components. Each utility cabinet set would have four to five individual cabinets as listed below:

- Mechanical cabinet. One mechanical cabinet, which could range in size as follows: from 3.4 to 6.7 feet long by 2.75 feet wide by 6.5 feet tall (approximately 43 cabinets project-wide); or 10 feet long by 2.75 feet wide by 5.5 feet tall (approximately 10 cabinets project-wide); or 17.5 feet long by 2.75 feet wide by 6.5 feet tall (approximately two cabinets project-wide).

- Power cabinet. One PG&E power drop cabinet approximately 1.6 feet long by 1 foot wide by 5.25 feet tall.
- Battery cabinet. One battery cabinet 6.6 feet long by 1.7 feet wide by 4 feet tall. Battery power supply housed in cabinets would provide power to operate the valves in case of a PG&E power outage.
- Remote telemetry unit cabinet. One remote telemetry unit cabinet ranging from approximately 6 to 9 feet long by 2 feet wide by 6 feet tall. The larger size cabinets would house remote telemetry unit, supervisory control and data acquisition communications systems to monitor and control the valves, sump pump controllers, and connect with power sources.
- Sump Pump Controller Cabinet. In some cases, the sump pump controllers would be housed in a separate cabinet ranging in size from 2 to 4 feet long by 1 foot wide by 6 feet tall.

Each cabinet set would have a disc communications antenna approximately 6 inches tall by 1 foot diameter installed on one of the cabinets. Cabinets would be installed on a reinforced concrete pad approximately 2 feet below grade. [Figure 2](#) illustrates typical cabinets, although these cabinets are not the exact sizes as those proposed for the project.

In addition, to facilitate water quality sampling by SFPUC staff, approximately 15 sampling stations would be installed along sidewalks in aboveground cabinets approximately 1.5 feet in diameter and approximately 4 feet tall (see [Figure 3](#)). The sampling stations would have concrete pad foundations approximately 3 feet by 3 feet in area and approximately 1 foot below grade. The stations would be connected to pressure-reducing valves in precast, below-ground vaults, approximately 4 feet by 2 feet in area and approximately 3 feet deep; the vaults would be located either on the street or sidewalk depending on location and existing utilities.

## ***FIRE HYDRANTS***

Approximately 130 new high-pressure fire hydrants would be installed approximately every 500 feet along the pipeline alignment. The fire hydrants would meet potable drinking water standards and be operated in the same manner as current fire hydrants. The fire hydrants would connect to the system via 8-inch laterals and the hydrant pit would be excavated to approximately 8 feet below grade for connection to the lateral pipe. [Figure 4](#) shows a typical high-pressure fire hydrant.



**Figure 2. Example Aboveground Cabinet**



SOURCE: SFPUC, 2024

Note: Cabinets shown above are not the exact sizes of those that would be installed for the project but are intended to illustrate general appearance of typical utility cabinets. The four utility cabinets have width, depth, and height as follows: 3 feet x 3 feet x 4 feet (left), 8 feet x 2 feet 3 inches x 5 feet (center), 2 feet 6 inches x 2 feet x 3 inches (right), 2 feet x 1 foot 8 inches x 3 feet 8 inches (right rear).

**Figure 3. Example Sampling Station**



SOURCE: SFPUC, 2024

**Figure 4. Example High-Pressure Fire Hydrant**



SOURCE: SFPUC, 2024

## PUMP STATIONS

The project includes modifications at the existing Lake Merced Pump Station and two new emergency pump stations. Pump station 1 would be constructed at the existing Central Pump Station/Merced Manor Reservoir facility and pump station 2 would be constructed at the Sunset Reservoir facility, as described below.

### LAKE MERCED PUMP STATION UPGRADES

The existing Lake Merced Pump Station serves as a booster station for the low-pressure distribution system, bringing water from the regional water supply via the Sunset Supply Pipeline from the San Francisco Peninsula and distributing it in the city through the distribution system. The pump station includes two pump houses, a utility building, surge tanks, and underground fuel tanks. Vehicular access is provided by a driveway from Lake Merced Boulevard.

In the event of a catastrophic emergency, Lake Merced can also be used as a non-potable water source for firefighting as well as a drinking water source if other water supplies are not available, subject to a boil water order.<sup>10</sup> Lake draw intake pipes and pumps were installed in the 1950s.<sup>11</sup> To prevent inadvertent contamination, this existing emergency system is isolated from the potable low-pressure distribution system by an air gap. In an emergency where non-potable lake water is needed, a removable pipe spool would be used to close the air gap and connect the emergency pumps to the potable pipe network. Using lake water is a last resort and this procedure would only be implemented if other supplies are exhausted or unavailable. If lake water is introduced to the existing potable water system, the City would issue a boil water order until lake water can be flushed from the system and the potable water system pipelines can be disinfected. The disinfection process would be the same as the process used to disinfect new pipes before they are brought into service and would entail cleaning and chlorinating any portions of the potable water system into which lake water had been introduced to ensure absence of bacteria and contaminants. Disinfecting water would be dechlorinated as it is discharged, consistent with the SFPUC standard operating procedures for disinfection.<sup>12</sup> Depending on the extent of the potable water system into which lake water was introduced, this process could take weeks to months and would require disinfection of all potable water systems in which lake water had been used, including pipelines owned and maintained by customers. Although Lake Merced is designated as an emergency non-potable supply water, it has not been used as such since the regional water supply was constructed in the 1930s.

The project would include upgrades to the Lake Merced Pump Station for its continued use as a booster station and source of water supply for the new high-pressure system in a catastrophic emergency. The project would not change the capacity of the lake draw system, and the amount of water and flow rates would remain the same as existing conditions. No new pipelines would need to be constructed to draw water from Lake Merced.

In addition to the new pipe, described in Pipelines above, which would be installed at the pump station and connect to the existing pumps, the project includes modifications at the pump station to improve the pump

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10 After Hetch Hetchy water was brought to the city by the Hetch Hetchy Aqueduct in 1934, Lake Merced was no longer used as a drinking water source for the city and was designated as an emergency non-potable supply. SFPUC, *Technical Memorandum, 2020 Lake Merced Water Quality Monitoring Report*.

11 Each of the lake draw pumps has a capacity of approximately 16,200 gallons per minute (gpm); when they are combined, they have a capacity of approximately 30,000 gpm. The lake draw pumps are exercised approximately once a month and the water is returned to the lake.

12 SFPUC, *Manual of Procedures for Disinfection/Dechlorination and Related Tasks*. Revised April 2011.

operation, electrical and communications systems, as well as to switch the system more easily to lake water. The improvements would consist of the following:

- Repair damaged discharge valves in the potable water system pumps (Sutro pumps) and upsize existing manifold piping to allow for increased potable water flows to meet the project's design flow criteria.
- Install new flanges on the lake draw pump pipe, at either side of the air gap, to decrease the time required to install the spool piece that is used during a catastrophic emergency.
- Upgrade electrical, instrumentation and controls, actuators, valves, flow meters, and control panels; update existing supervisory control and data acquisition system to incorporate the new/modified components.
- Upgrade electrical system, including installation of a new 2.5-megawatt emergency generator (equivalent to 3,300 horsepower) within an existing building to run both lake draw pumps if PG&E power is disrupted in a catastrophic emergency.<sup>13</sup>

The majority of the improvements at the Lake Merced Pump Station would be constructed during the initial project phases; however, the new emergency generator would be installed in a later phase.

In addition, a new 42-inch-diameter, high-pressure pipe would be installed between the existing pump house buildings, connecting to the existing pump outflow pipes and extending up the slope to Lake Merced Boulevard. Either the existing surge tank would be reconfigured, or a new surge tank would be installed, to provide surge protection to the proposed pipeline.

Project components at Lake Merced are illustrated in [Figure 5](#).

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13 Three existing backup generators are installed at the pump station (two 2.5 MW and one 375 kW diesel generators). Emergency generators at the pump station are exercised approximately once a month for approximately 15 minutes without load and then twice annually with full load for approximately 4 hours.



**Figure 5. Lake Merced Pump Station Upgrades (revised)**



SOURCE: ESRI, World Topographic Map [base map] accessed August 22, 2024. City and County of San Francisco, DataSF, accessed August 23, 2024.

## **NEW EMERGENCY PUMP STATION 1 AT CENTRAL PUMP STATION/MERCED MANOR RESERVOIR FACILITY**

The existing Central Pump Station consists of a building that houses pumps used by the low-pressure distribution system to pump flows to Stanford Heights Reservoir and Sutro Reservoir. The site has surge tanks and underground fuel tanks. The pump house building was constructed in 1913.

Just south of the Central Pump Station is the Merced Manor Reservoir, which consists of two in-ground, covered reservoir basins that operate together as a single combined reservoir. The basins are located within a mound that rises from the sidewalk perimeter. The reservoir is a terminal reservoir, which means it receives water directly from a transmission line and distributes drinking water to the immediate neighborhoods. Merced Manor Reservoir was constructed in 1936.

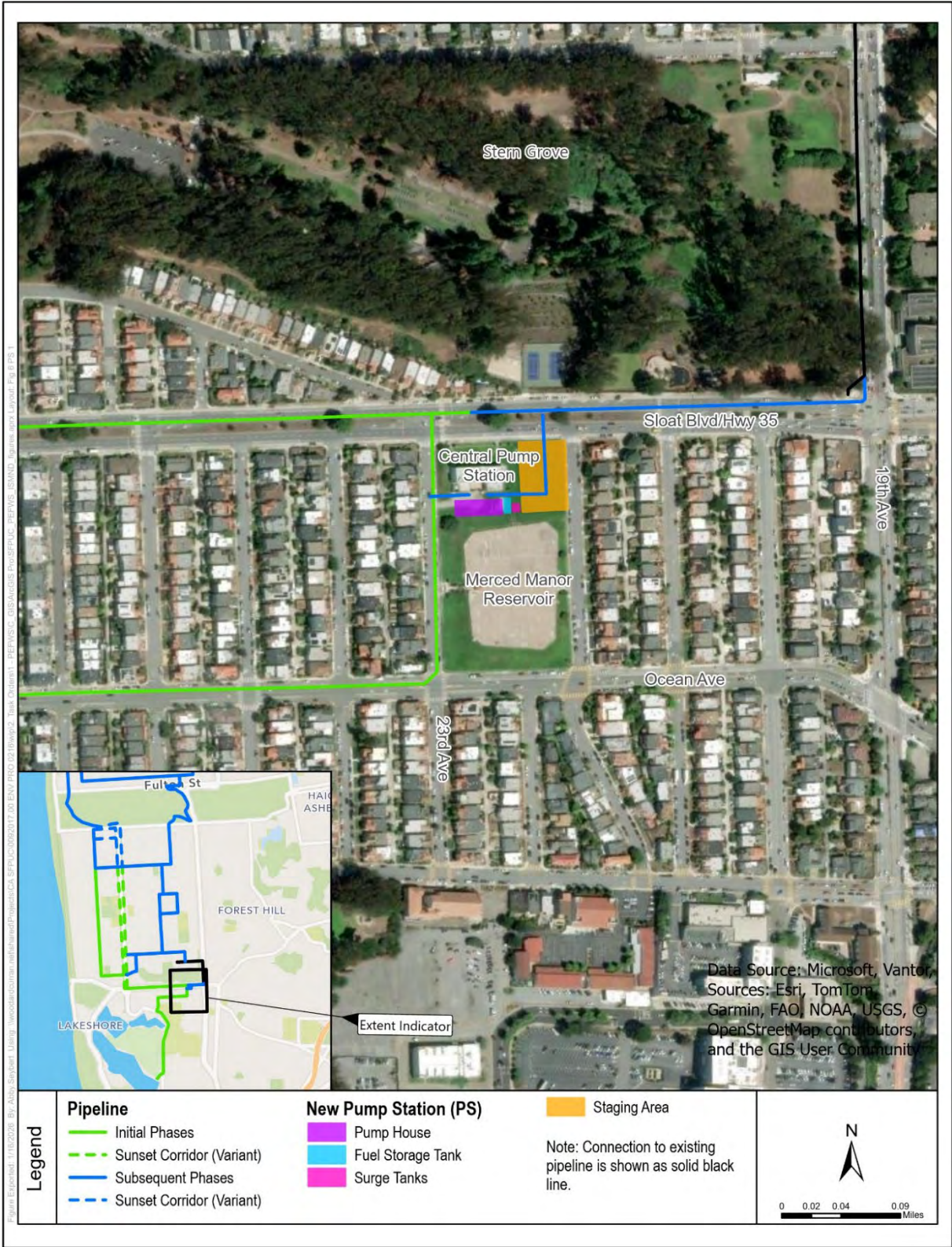
A new, emergency pump station enclosed within a new building would be constructed at the Central Pump Station/Merced Manor Reservoir facility as part of the project. The new pump station would be constructed during later project phases as described further in Pump Station Construction Methods, below. The new pump station building would house up to three new diesel engine pumps, each comprised of a 1,000- to 1,500-horsepower engine that drive up to three 15,000-gallon-per-minute pumps. The pump station would boost water entering the new system to higher pressures for firefighting. The pumps would allow the system to achieve a flow rate of 30,000 gallons per minute (with expansion potential to 60,000 gallons per minute by 2050) to supply and pressurize the new pipeline to a minimum pressure of 150 pounds per square inch. The pumps would be capable of conveying water sourced from San Andreas Pipelines 2 and 3, Sunset Supply Pipeline, Sutro Reservoir, or Lake Merced to the new high-pressure system.

The new building would be approximately 130 feet long by 40 feet wide (5,200 square feet) by 27 feet tall. It would be constructed at the rear (south) of the existing pump station building on an area currently occupied by a parking lot, just north of the reservoir. The new building would be similar to the existing building in terms of size and massing. The existing surge tanks and underground fuel storage tanks would be replaced with new larger tanks to accommodate the new pump station, placed above ground, and located adjacent to the proposed building. The proposed fuel storage tank would be approximately 15 feet in diameter, 30 feet long, and 16 feet tall, placed on a concrete slab foundation approximately 35 feet by 20 feet to approximately 2 feet below grade and would contain about 30,000 gallons of fuel. The surge tank would be approximately 10 feet in diameter, 20 feet long, and 11 feet tall, placed on a concrete slab foundation approximately 25 feet by 15 feet to approximately 2 feet below grade. Tanks may be surrounded by chain link fence with screening. Vehicular access would be generally in the same location as the existing driveway on 23rd Avenue. The new pump station would have exterior lighting similar to the pump station lighting at the existing Central Pump Station building.

Pipeline tees from the new pipelines in 23rd Avenue and Sloat Boulevard would extend to the new pump house. The proposed pump station components are illustrated in [Figure 6](#) and [Figure 7](#), which show the conceptual site layout. The conceptual building massing concept in [Figure 7](#) is provided to illustrate the relationship of the proposed new pump station structure to the existing Central Pump Station.



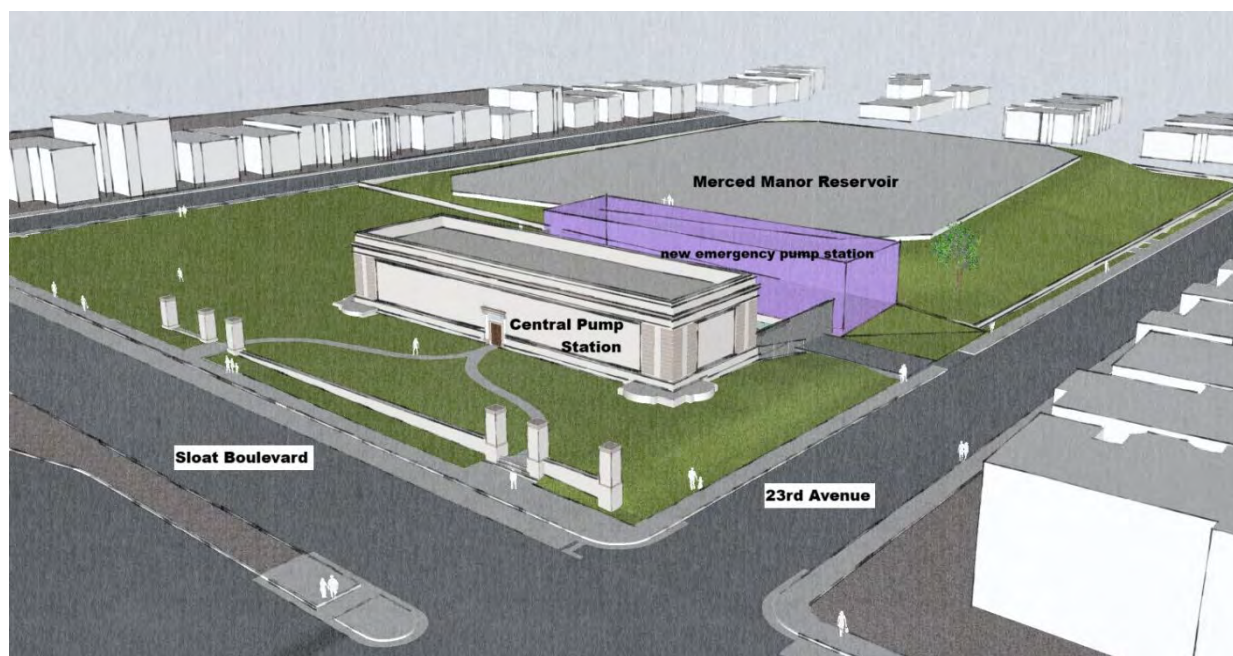
**Figure 6. New Emergency Pump Station 1 at Central Pump Station/Merced Manor Reservoir Facility (revised)**



SOURCE: ESRI, World Topographic Map [base map] accessed August 22, 2024. City and County of San Francisco, DataSF, accessed August 23, 2024.



**Figure 7. New Emergency Pump Station 1, Aerial View of Conceptual Massing**



SOURCE: SFPUC, 2024, Pump Station 1.

### **NEW EMERGENCY PUMP STATION 2 AT SUNSET RESERVOIR FACILITY**

The existing Sunset Reservoir facility is composed of two connected, covered basins, the north and south basins. The north basin was constructed in 1938 and seismically upgraded in 2009 and the south basin was constructed in 1960. A new emergency pump station building would be constructed at the Sunset Reservoir facility to serve the project (see Figure 8). The new station would be constructed during subsequent project phases as described further in Pump Station Construction Methods, below. Similar to the new pump station 1, this new station would house up to three new diesel engine pumps each comprised of a 1,000- to 1,500-horsepower engine and 15,000-gallon-per-minute pump. The pump station would boost water entering the new high-pressure system to the pressures required for firefighting needs. These pumps would be capable of lifting water from San Andreas Pipeline 2, Sunset Supply Pipeline, or Lake Merced and delivering it to the new high-pressure pipelines.

Two locations within the Sunset Reservoir facility are being considered for the new pump house. The proposed (i.e. preferred) location is at the periphery of the reservoir along 24th Avenue near Pacheco Street. The building would be approximately 150 feet long by 75 feet wide (11,250 square feet) by 27 feet tall. The proposed fuel storage tank would be approximately 15 feet in diameter, 30 feet long, and 16 feet tall, placed on a concrete slab foundation approximately 35 feet by 20 feet to approximately 2 feet below grade and would contain about 30,000 gallons of fuel. The surge tank would be approximately 10 feet in diameter, 20 feet long, and 11 feet tall, placed on a concrete slab foundation approximately 25 feet by 15 feet to approximately 2 feet below grade. Tanks may be surrounded by chain link fence with screening. The new pump station would have exterior lighting similar to the pump station lighting at other pump stations in the city such as the existing Central Pump Station. A pipeline tee from the proposed pipeline in 24th Avenue would extend to the new pump house. Vehicular access would be from the existing gated driveways on 28th Avenue at Pacheco Street and Quintara Street at 27th Avenue.



**Figure 8. New Emergency Pump Station 2 at Sunset Reservoir Facility (revised)**



SOURCE: ESRI, World Topographic Map [base map] accessed August 22, 2024. City and County of San Francisco, DataSF, accessed August 23, 2024.

An alternative location, referred to as pump station 2 project variant, is at the northwest corner of the block along 28th Avenue and Ortega Street. The building and project elements at this pump location would be similar to those of the preferred location. A pipeline tee from the proposed pipe in 28th Avenue would extend to the new pump house. Vehicular access would be from an existing curb cut on 28th Avenue to the existing paved pathway. Two new parking spaces for maintenance activities would be constructed onsite. Project components proposed for the Sunset Reservoir facility are illustrated in [Figure 8](#).

## Construction Activities and Schedule

This section describes the following construction-related information for the project:

- Pipeline construction methods, including for open-trench and trenchless construction, soil improvements, pipeline shutdown, abandonment and startup, vaults and other components;
- Pump station construction methods;
- Demolition, excavation and materials hauling;
- Hazardous materials handling;
- Dewatering;
- Site access and staging;
- Site Restoration;
- Construction equipment;
- Construction workforce;
- Construction schedule; and
- SFPUC Standard Construction Measures.

## PIPELINE CONSTRUCTION METHODS

Open-trench construction would be used to install the pipeline along most of the alignment. Most open-trench construction would use conventional equipment and would not require pile driving, but vibratory sheet pile drivers may be required for installation of sheet piles in excavations where soil conditions make installation by other means impossible. For limited sections of the alignment, trenchless construction method(s) would be used to avoid disruptions to transit or vehicular traffic. The open cut and trenchless construction methods are discussed in detail below. Vaults would also be installed via the open-trench method. Other associated elements of pipeline construction would entail soil improvements at locations subject to liquefaction at Lake Merced Pump Station and along Lake Merced Boulevard, abandonment of a segment of the existing 36-inch Sutro pipeline, and pipeline shutdown and startup. [Table 5](#) provides a summary of construction information for each of the construction methods.

**Table 5. Construction Activities**

| Construction Activity                                          | Estimated Construction Duration                                   | Dimensions of Excavated Area                                                                                                         | Estimated Construction Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Construction Crew                  | Construction Timing (hours/days) <sup>a,b</sup> |
|----------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------|
| <b>Pipelines and Appurtenances</b>                             |                                                                   |                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                    |                                                 |
| <b><i>Pipeline Construction - Open-Trench Construction</i></b> | Constructed in stages at rate of approximately 20–30 feet per day | 24- to 42-inch pipe installed in a trench 4 to 8 feet wide by 7 to 10 feet deep, up to 16 feet deep where needed to avoid utilities. | <ul style="list-style-type: none"> <li>• Flatbed truck</li> <li>• Water truck</li> <li>• Concrete truck</li> <li>• Dump Truck</li> <li>• Traffic Arrow Boards</li> <li>• Saw-cutting machine</li> <li>• Crane</li> <li>• Excavators</li> <li>• Vibratory Sheet Pile driver (when required by soil conditions)</li> <li>• Loader</li> <li>• Backhoe</li> <li>• Sweeper</li> <li>• Paver</li> <li>• Hopper</li> <li>• Grinder</li> <li>• Oil spreading truck</li> <li>• Soil compactor</li> <li>• Vibratory rollers</li> <li>• Pumps</li> <li>• Air compressor</li> <li>• Welding machine</li> <li>• Generator</li> <li>• Air Fans</li> </ul> | One to two crews of 5 workers each | Weekdays<br>7 a.m. to 5 p.m.                    |

| Construction Activity                                  | Estimated Construction Duration                                                                                                      | Dimensions of Excavated Area                                                                                                                                                                                                                                                                                                                                | Estimated Construction Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Construction Crew                     | Construction Timing (hours/days) <sup>a,b</sup>                                                           |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Pipeline Construction – Trenchless Construction</b> | Approximately 11 weeks at each intersection (6 weeks for excavation of shafts, 2 weeks for boring, and 3 weeks for other activities) | Jacking shaft: approximately 42 by 18 feet<br>Receiving shaft: 22 by 18 feet<br>Shaft depth: 20 to 30 feet below ground surface<br>Pipeline depth: 15 to 20 feet                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Same equipment as open trench, and:</li> <li>Auger drill rig</li> <li>Auger bore motor</li> <li>Boom crane</li> <li>Grouting machine</li> <li>Pilot/guide tube equipment</li> </ul>                                                                                                                                                                                                                                                             | One crew of 6 workers                 | Weekdays 7 a.m. to 5 p.m.<br>Limited nighttime work may be needed for boring under Muni light rail lines. |
| <b>Soil Improvements</b>                               | Approximately 3 to 9 months per segment; 3 segments                                                                                  | <p><b>Soil strengthening under pipeline:</b> 200- to 500-foot-long segments, 2- to 9-foot diameter columns along the pipeline, up to 50-feet deep</p> <p><b>Slope retaining walls:</b> 500- to 600-foot-long segments, 3-feet wide, up to 50-feet deep</p> <p><b>Re-compaction of unstable soils:</b> 130-foot-long segment, 30-feet wide, 15-feet deep</p> | <ul style="list-style-type: none"> <li>Compactor</li> <li>Concrete Mixer</li> <li>Concrete Vibrator</li> <li>Delivery truck</li> <li>Concrete truck</li> <li>Dump truck</li> <li>Water truck</li> <li>Drilling Rig</li> <li>Excavator or Backhoe</li> <li>Grout Mixer</li> <li>Grout Pump</li> <li>Crane</li> <li>Injection Pipes or Tubes</li> <li>Loader</li> <li>Paver</li> <li>Rebar Cutter and Bender</li> <li>Saw-cutting equipment</li> <li>Scraper</li> <li>Tractor</li> </ul> | One to three crews of 10 workers each | Weekdays 7 a.m. to 5 p.m.                                                                                 |



| Construction Activity                           | Estimated Construction Duration                                                         | Dimensions of Excavated Area                                                                                                                                      | Estimated Construction Equipment                                                                                                                                                                                                                                                                                                                                                            | Construction Crew                  | Construction Timing (hours/days) <sup>a,b</sup> |
|-------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------|
| <b><i>Vault Construction</i></b>                | Approximately 2 to 3 weeks per vault                                                    | Area to be excavated would range from approximately 16 feet wide by 20 feet long by 16 feet deep up to approximately 30 feet wide by 32 feet long by 16 feet deep | <ul style="list-style-type: none"> <li>Same equipment as open trench</li> </ul>                                                                                                                                                                                                                                                                                                             | One crew of 5 workers              | Weekdays<br>7 a.m. to 5 p.m.                    |
| <b><i>Pipeline Abandonment</i></b>              | Approximately 2 miles of 36-inch pipe to be abandoned. Approximately two weeks of work. | Where manholes are not available, an access pit up to 10 feet wide by 10 feet long would be excavated to the top of the pipe.                                     | <ul style="list-style-type: none"> <li>Deckmate pumping machine</li> <li>Concrete truck</li> </ul> If access pits required: <ul style="list-style-type: none"> <li>Saw-cutting machine</li> <li>Excavator</li> <li>Dump truck</li> <li>Generator</li> <li>Paver</li> <li>Hopper</li> <li>Grinder</li> <li>Oil spreading truck</li> <li>Soil compactor</li> <li>Vibratory rollers</li> </ul> | One crew of 5 workers              | Weekdays<br>7 a.m. to 5 p.m.                    |
| <b>Pump Stations</b>                            |                                                                                         |                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                             |                                    |                                                 |
| <b><i>Lake Merced Pump Station Upgrades</i></b> | Approximately 6 months                                                                  | No excavation needed.                                                                                                                                             | Improvements would occur inside the existing pump station and would not require heavy construction equipment.                                                                                                                                                                                                                                                                               | One to two crews of 5 workers each | Weekdays<br>7 a.m. to 5 p.m.                    |

| Construction Activity                   | Estimated Construction Duration                                                        | Dimensions of Excavated Area                                                                                                                                                                                                   | Estimated Construction Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Construction Crew                                                                                              | Construction Timing (hours/days) <sup>a,b</sup> |
|-----------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| <b><i>New pump stations 1 and 2</i></b> | Pump station 1:<br>Approximately 2 years<br>Pump station 2:<br>approximately 2.5 years | Pump station 1:<br>approximately 125-feet long by 40-feet wide by 10-feet deep<br>Pump station 2:<br>approximately 150-feet long by 75-feet wide by 10-feet deep<br>Tank pads at both pump stations approximately 1 foot deep. | <ul style="list-style-type: none"> <li>• Loader</li> <li>• Skid steer</li> <li>• Forklift</li> <li>• Drill Rig</li> <li>• Excavator</li> <li>• Hoe ram</li> <li>• Crane</li> <li>• Concrete saw</li> <li>• Compactor</li> <li>• Grader</li> <li>• Rock saw</li> <li>• Generator</li> <li>• Boom lift</li> <li>• Scissor lift</li> <li>• Concrete Mixer</li> <li>• Dump Truck</li> <li>• Boom concrete pump</li> <li>• Air compressor</li> <li>• Welder</li> <li>• Paver</li> <li>• Vibratory Roller</li> </ul> | Typically one to three crews of 5 workers each, with up to five crews for foundation and building construction | Weekdays<br>7 a.m. to 5 p.m.                    |

Notes:

a. The City of San Francisco allows construction between 7:00 a.m. and 8:00 p.m., seven days a week such that work could occur during this time as necessary (i.e., to meet critical project milestones). SFPUC may allow the contractor to conduct weekend work between 7:00 a.m. and 8:00 p.m. on a case-by-case basis when needed to meet project milestones. No work would be conducted on holidays. The San Francisco Municipal Transportation Agency (Transportation Agency) regulates work hours on streets of major traffic importance and major Muni routes. Some routes in the project area may be subject to restrictions during rush hour (i.e., 7 a.m. to 9 a.m. and 3 p.m. to 7 p.m.).

b. Dewatering pumps may operate 24 hours per day, seven days per week.

SOURCE: SFPUC.

## OPEN-TRENCH CONSTRUCTION

The open-cut or open-trench construction method would be used for most of the pipeline installation. This method involves the following steps: delineating the work area, cutting pavement or clearing the ground surface and removing vegetation and encroaching trees if needed; excavating and shoring the trench; placing pipe structural fill/bedding material; placing the pipe and welding pipe sections together; backfilling the trench; and restoring the work surface by paving or landscape restoration. Underground utilities would be identified prior to excavation pursuant to state regulation, and relocation of utilities and other subgrade structures could be required; any utility relocation would occur within the existing right-of-way.

The pipeline would typically be installed along one side of the street between the centerline and the curb. An approximately 20-foot-wide construction area would typically be necessary. The trench would be approximately 4 to 8 feet wide. The pipeline would typically be installed approximately 3.5 feet below grade. The maximum depth of excavation would range from approximately 7 feet for the 24-inch pipe to 10 feet below grade for the 42-inch pipe and could extend up to 16 feet deep to avoid existing utilities where needed. At pipeline joints, additional excavation of approximately 2 to 3 feet would be required (both width and depth). It would be necessary to dewater trenches in areas where groundwater is encountered as discussed in “Dewatering,” below.

Once the trench is excavated and shored, structural fill bedding material (e.g., imported subbase aggregate and sand) would be placed along the bottom of the trench, and the new pipe section would then be lowered by crane or backhoe and welded into place. The pipelines would also require tee(s), bends or elbows, and other fittings, as well as valves, laterals, and other connections to hydrants, low-pressure water pipelines, and pump stations. At each new fire hydrant location along the pipeline, a trench would be excavated to install an 8-inch-diameter lateral pipe to connect the pipeline to the hydrant in the sidewalk; trench width would be up to approximately 5 feet with the depth the same as the pipeline to which the lateral connects. Cathodic protection to prevent corrosion (described above) would be installed along the pipeline. Excavated materials would be reused as backfill when feasible. Sidewalk curb ramps would be installed or repaired as needed along the alignment per Public Works’ requirements.

Pipeline construction using the open-cut trench method would likely progress at a rate of 20 to 30 feet per day for the large diameter pipes, depending on the number of existing utilities along the alignment, the number of steel welds required for each segment, and City regulations for traffic management. About 100 to 150 feet of pipe would typically be installed in a five-day workweek, and a trench approximately 100 to 300-feet long would be opened at one time for pipeline construction. Trenches would be backfilled and temporary paving installed as work progresses. Subsequent final paving would progress at a rate of approximately 300 feet per day and would occur after a substantial length of pipeline has been constructed; final paving may not occur until the entire length of pipeline has been constructed. Installation of the 24-inch diameter pipe would proceed at a faster rate of approximately 40 to 60 feet per day.

The duration of construction activities at any one location would be approximately two weeks, including temporary repaving. However, construction activities at any one location may not be continuous and may extend over a longer period. For example, there could be several days between the completion of excavation and the beginning of pipe installation, during which time excavation would continue to advance along the alignment. Similarly, backfill activities and paving may not be continuous with prior construction activities. During the construction period, trenches would be covered at the end of each workday with steel plates.

Most of the trenching activities and associated staging would occupy the parking lane and one travel lane on each street. Temporary closure of city blocks could occur at times during pipeline construction, depending on traffic needs and detours would be provided as needed. Local access would be maintained for residents and businesses throughout project construction. Access and neighbor notifications are described in Construction Schedule, below.

## TRENCHLESS CONSTRUCTION

Trenchless construction (e.g., horizontal auger method) may be used at locations where the proposed pipeline alignment crosses under areas where surface disturbance needs to be avoided, such as Municipal Railway (Muni) light rail lines and within the Caltrans right-of-way (i.e., Sloat Boulevard and 19th Avenue) (see [Figure 9](#)). Trenchless construction would allow the pipelines to be installed under light rail lines and/or roadways without disturbing them. However, if trenchless crossing is not required, open trench construction would be used at these locations, as described above.

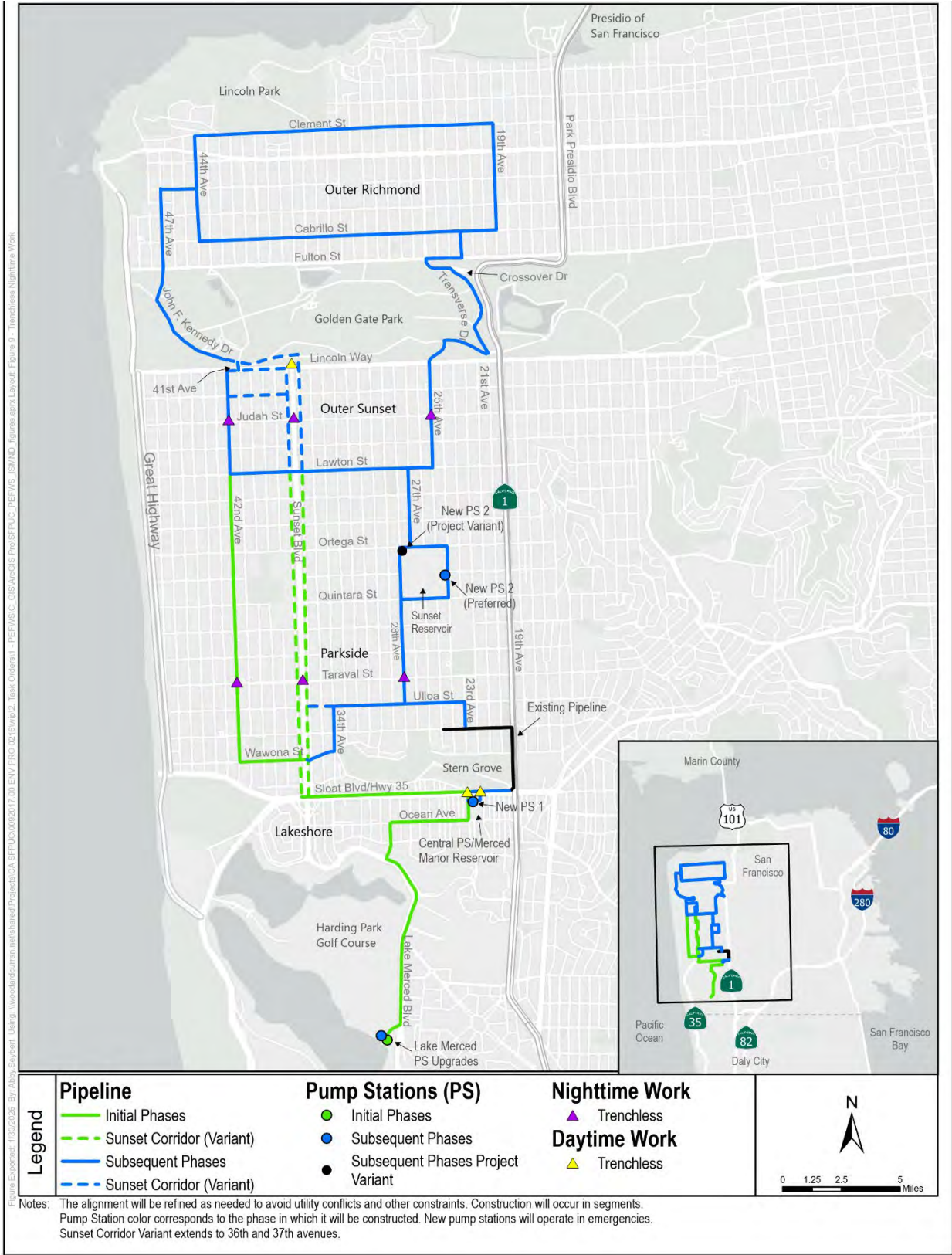
The proposed pipeline alignment would cross the L-Taraval Muni light rail line at the intersections of Taraval Street and 28th and 42nd Avenues and the N-Judah Muni light rail line at the intersections of Judah Street and ~~21st~~ 25th and 42nd Avenues. The Sunset Boulevard corridor project variant pipeline alignment would cross the L-Taraval Muni light rail line at the intersection of Taraval Street at the corridor streets (Sunset Boulevard, 36th Avenue, and/or 37th Avenue) and would cross the N-Judah light rail line at the intersection of Judah Street at the same corridor streets. In addition, trenchless crossings may be required across Sloat Boulevard at 23rd Avenue and at pump station 1, as well as from Lincoln Way to John F. Kennedy Drive.

For trenchless construction, an approximately 42- by 18-foot jacking shaft and a 22- by 18-foot receiving shaft would be excavated to the appropriate depth, set back from each side of the intersection along the roadway. The shafts would be excavated to approximately 20 to 30 feet below ground surface and the pipe would be installed approximately 15 to 20 feet below ground surface, depending on the vertical locations of existing utilities. The shafts would be shored for stability and would be dewatered if groundwater is encountered. It would be necessary to dewater shafts in areas where groundwater is encountered as discussed in “Dewatering,” below. The pipeline segments would be installed within protective welded steel pipe casings and would also be provided with cathodic protection. [Figure 10](#) shows a diagram of a typical trenchless crossing. Staging would occur within the parking lane or roadway adjacent to the shaft locations.

Trenchless pipeline construction would require approximately 11 weeks per roadway intersection crossing, with approximately 4 weeks to construct the jacking shaft, 2 weeks for constructing the receiving shaft, 2 weeks for horizontal boring, and 3 weeks for other activities, including site restoration.

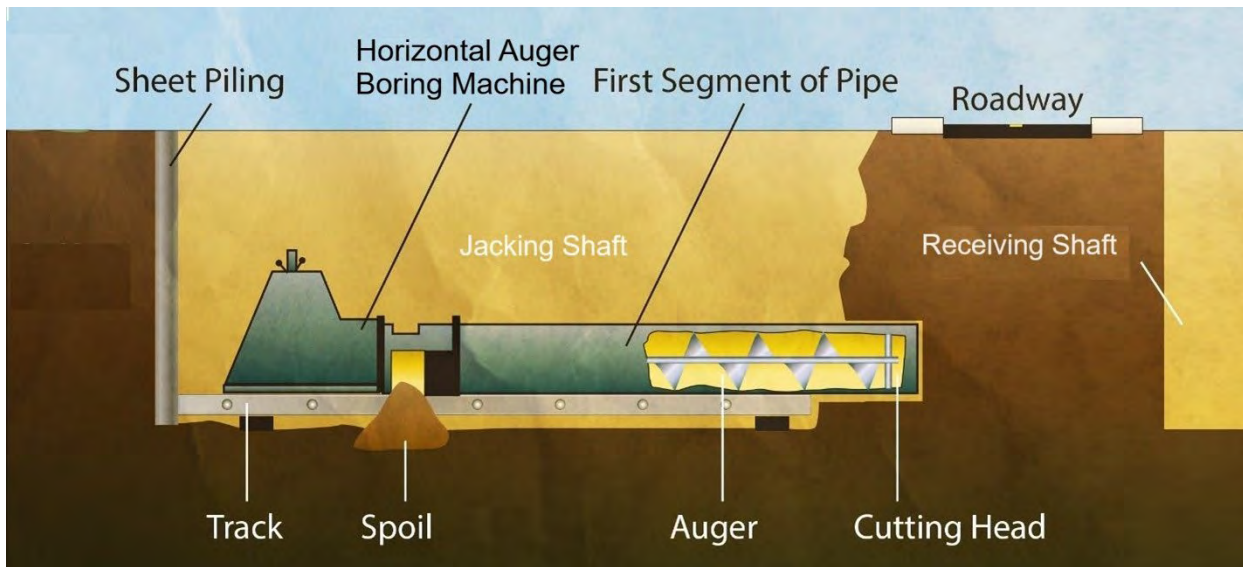


Figure 9. Potential Trenchless Crossings and Nighttime Work (revised)



SOURCE: ESRI, World Topographic Map [base map] accessed August 22, 2024. City and County of San Francisco, DataSF, accessed August 23, 2024.

**Figure 10. Diagram of Typical Trenchless Crossing Under Roadway**



SOURCE: Woodard & Curran, 2024, Diagram of Typical Trenchless Crossing.

## SOIL IMPROVEMENTS

Soil improvements would be required within three areas along the alignment that have potential landslide and liquefaction risks (see Figure 11). These areas are located at the Lake Merced Pump Station and along Lake Merced Boulevard. Soil improvement techniques would strengthen the soils beneath the proposed pipe by installing grout or concrete foundations or piers below grade and would not be visible (i.e., above ground). Techniques for strengthening soils could include compaction grouting, vibro-replacement stone columns, cement deep soil mixing, drilled micro-piles, or jet grouting. Compaction grouting uses a small diameter (2-inch to 4-inch) steel casing that is advanced through the area to be improved, and a stiff mortar-like grout is injected at high pressure to displace and compact the surrounding soils. Installation of vibro-replacement stone columns entails construction of dense concrete aggregate columns (stone columns) using a vibrator suspended from a crane that pushes stones into the soil. Cement deep soil mixing uses mechanical mixing tools to shear the soil below grade and mix it with a cementitious slurry pumped at low pressure, creating soil mix columns. Drilled micro-piles use casing that is advanced to the design depth using a drilling technique. Reinforcing steel is inserted into the casing and high-strength cement grout is then pumped into the casing. Jet grouting uses a grouting monitor attached to the end of a drill stem to jet high-velocity cement grout with water and air into the soil, creating cemented soils.

These improvements would be installed along the proposed pipe centerline and would be 10 to 30 feet wide and extend down to approximately 50 feet below grade. These improvements would be installed to depth, and the top 5 feet of soil would then be excavated and replaced with compacted engineered fill.

Construction of belowground retaining structures such as secant pile walls<sup>14</sup> or slope-stabilizing drilled piers may be required along the western edge of Lake Merced Boulevard at several locations to address landslide potential and prevent movement of the pipeline during an earthquake. The retaining structures would be approximately 3 feet wide and up to 50 feet deep. Holes would be drilled in the soil to depth, casings or reinforcements would be installed, concrete would be poured into the drilled holes, and the piers would be

14 Secant piles are columns constructed overlapping (secant) to form structural or cutoff walls.

connected by a tie team. Tie backs may be installed along the wall to provide greater lateral stability; tie backs could require excavation down to 4 to 5 feet.

Installation of soil-strengthening materials and construction of the retaining walls would entail closure of a portion of the outermost traffic lane during construction, in both the northbound and southbound directions. Construction of each segment of these improvements could occur over 3 to 9 months, at a rate of approximately 25 to 175 feet per month, depending on the length of the improvement and the number of workers working at one time.

In addition, to allow for use of construction equipment on the slope from the Lake Merced Pump Station uphill to Lake Merced Boulevard, unstable soils would be excavated to approximately 15 feet below grade and approximately 30 feet wide along the centerline of the pipe alignment, backfilled with engineered fill, and compacted.

### **PIPELINE SHUTDOWN, ABANDONMENT, AND STARTUP**

A segment of the existing 36-inch-diameter Sutro Pipeline, from the Lake Merced Pump Station to the Central Pump Station, would be replaced with a new high-pressure pipeline. The existing pipeline would be abandoned in place. Prior to abandonment, the pipeline segment would be isolated, shut down, and dewatered (water removed from the pipeline). Dewatering would entail draining the water via one or more blowoff valves and dechlorinating it through the addition of treatment chemicals to neutralize the chloramines before discharge to a nearby sewer or storm drain, open channel, or creek. Any planned discharges would be performed in accordance with the Waste Discharge Requirements stipulated in the State Water Quality Control Board Order WQ 2014-0194-DWQ (General Order No. CAG140001).<sup>15</sup> This order, which specifies criteria for discharge flow rate, effluent limitations, and monitoring requirements, is discussed in Section E.17, Hydrology and Water Quality.

The abandoned pipeline segment would be cut and capped at the ends and filled with slurry grout. The pipe would be filled at existing access points such as manholes; if adequate manholes are not available, an access pit up to 10 feet wide by 10 feet long would be excavated to the top of the pipe, and the pipe would be cut and then slurry filled and capped. Access locations would be needed approximately every street block. Slurry fill would be anticipated to be completed in approximately two weeks.

After each segment or phase of the project is constructed, the startup process would entail hydrostatic testing (a pressure test that evaluates the structural integrity of the pipe) and disinfecting (cleaning and chlorinating to ensure absence of bacteria and contaminants) of pipes, and dechlorinating of the disinfecting water as it is discharged, consistent with the SFPUC standard operating procedures for disinfection.<sup>16</sup>

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15 State Water Resources Control Board, Statewide National Pollutant Discharge Elimination System (NPDES) Permit for Drinking Water System Discharges to Waters of the United States. Order WQ 2014-0194-DWQ (General Order No. CAG140001), 2014.]

16 SFPUC, Manual of Procedures for Disinfection/Dechlorination and Related Tasks. Revised April 2011.



Figure 11. Soil Improvement Locations (revised)



SOURCE: ESRI, World Topographic Map [base map] accessed August 22, 2024. City and County of San Francisco, DataSF, accessed August 23, 2024.

## **VAULTS AND OTHER COMPONENTS**

Construction of the valve vaults would involve cutting and removing pavement and concrete, excavating and installing shoring, and building the forms for the vault structure and pouring concrete. An area equivalent to the vault dimensions as well as approximately 4 feet extra in each dimension would be excavated.

Excavations would range from approximately 16 feet wide by 20 feet long by 16 feet deep up to approximately 30 feet wide by 32 feet long by 16 feet deep. Construction would occur over approximately 2 to 3 weeks. During the construction period, trenches would be covered at the end of each workday with steel plates. Once each vault is constructed, the excavation would be backfilled and pavement restored. Other project elements (including valves, fire hydrants, aboveground cabinets, electrical connections, and supervisory control and data acquisition communications systems) could be installed concurrently with construction of the pipeline.

## **PUMP STATION CONSTRUCTION METHODS**

Two new emergency pump stations are proposed for the project and the construction methods would be similar for each. Construction of the new pump stations would include the following phases: mobilization; demolition; site preparation; grading and utilities work; construction of foundation; construction of the building; installation of pump and mechanical equipment; installation of electrical and instrumentation controls as well as startup, testing and commissioning; site restoration; and demobilization.

The new emergency pump station 1 at Central Pump Station/Merced Manor Reservoir is anticipated to be constructed in approximately 24 months and estimated duration of each phase is shown in [Table 6](#). The new emergency pump station 2 at Sunset Reservoir is over twice as large and thus anticipated to have a longer duration for construction, totaling approximately 30 months. Construction vehicle parking and equipment staging would occur onsite and also within the adjacent parking lanes near the sites.

## **DEMOLITION, EXCAVATION, AND MATERIALS HAULING**

Excavated material would include concrete, asphalt, and soils, which would be removed for construction of the pipeline, vaults, and pump stations. Overall, approximately 261,000 cubic yards of demolition debris, including concrete/asphalt pavement, and soils would be removed for the project. Excavations would be shored in accordance with the regulatory requirements of the California Department of Industrial Relations, as specified in Title 8 of the California Code of Regulations, which requires shoring for trenches of 5 feet or deeper to prevent the surrounding soil and adjacent structures from collapsing. Shoring would involve methods such as speed shoring (plywood siding with a cross-brace system), prefabricated trench boxes along the inside of the trench, jet grouting with soldier pile reinforcement, or drilled soldier piles with lagging.

Soil and debris removed from the work area would either be recycled or disposed of according to the provisions of the San Francisco Construction and Demolition Debris Ordinance (chapter 14 of the San Francisco Environment code and chapter 13B of the San Francisco Building Code). Soils would be tested for reuse onsite and handled as described below under “Hazardous Materials Handling”. Excavated materials would be processed in accordance with San Francisco City Ordinance 27-06, Construction and Demolition Program, which requires a minimum of 65 percent of materials to be recycled (diverted from landfill) or disposed of at an appropriate landfill in compliance with applicable federal, state, and local regulations. A construction and demolition debris management plan would be prepared. On-site stockpiling would be



limited, and at the end of each day, excess excavated soil would be transported and stockpiled at staging areas for testing and reuse for the project or transported for disposal at an appropriate landfill.

**Table 6. Estimated Construction Schedule for New Pump Stations**

| Construction Phase                                                         | Approximate Duration(months)<br>Pump station 1<br>at Central Pump Station | Approximate Duration(months)<br>Pump station 2<br>at Sunset Reservoir |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Mobilization                                                               | 1                                                                         | 1.25                                                                  |
| Demolition                                                                 | 0.5                                                                       | 0.75                                                                  |
| Site Preparation                                                           | 0.5                                                                       | 0.75                                                                  |
| Grading and Utilities                                                      | 3                                                                         | 3.75                                                                  |
| Foundations Construction                                                   | 1                                                                         | 1.25                                                                  |
| Building Construction                                                      | 5                                                                         | 6.25                                                                  |
| Pump/Mechanical Equipment Installation                                     | 4                                                                         | 5                                                                     |
| Electrical, Instrumentation, Controls, Startup, Testing, and Commissioning | 6                                                                         | 7.5                                                                   |
| Site Restoration                                                           | 2                                                                         | 2.5                                                                   |
| Demobilization                                                             | 1                                                                         | 1                                                                     |
| <b>Total</b>                                                               | <b>24</b>                                                                 | <b>30</b>                                                             |

SOURCE: SFPUC.

While most of the pipeline alignment would extend within the street right-of-way, a limited number of trees and other vegetation could be removed where they conflict with the pipeline alignment or other project components. At the Lake Merced Pump Station, it is estimated that up to five trees within the existing facility would need to be removed. At Sunset Reservoir, up to five trees within the existing facility may also be removed. In addition, in other unpaved areas of the pipeline alignment existing trees may conflict with the alignment such as in Golden Gate Park and may be required to be removed. The tree removal requirements at other locations are unknown at this time. If street trees are removed, they would be replaced consistent with the Urban Forestry Ordinance. Any necessary tree trimming and/or pruning would comply with San Francisco Public Works Code Section 808(c) (Protection of Trees and Landscape Material), which requires the establishment of a Tree Protection Plan to protect trees to be retained.

**Pipeline** - The entire project alignment (installation of approximately 16 miles of pipeline and related appurtenances) would require the excavation of approximately 200,000 cubic yards of soil and concrete/asphalt pavement, requiring approximately 20,000 off-haul (i.e., trips removing material from the project) truck trips project-wide. Additionally, approximately 182,000 cubic yards of sand and other backfill materials would need to be hauled to the project alignment. On-haul trips (i.e., trips importing material to the project) would also include the delivery of shoring materials, rebar, pipe, vaults, concrete, and other construction materials, which together with the sand and other backfill materials, would require approximately 20,300 on-haul truck trips project-wide.

Soil improvements required at certain locations along the alignment as described above would require removal of approximately 52,000 cubic yards of excavated soil from the site and importation of

approximately 44,000 cubic yards of engineered fill. Haul trips would also include delivery of materials including casings, beams, piers and concrete and would require a total of 9,550 trips.

**New Pump Stations** – Demolition would entail removal/relocation of the existing pavement, fences, and underground utilities, as needed to facilitate new construction. The amount of demolition debris is estimated at approximately 500 cubic yards per pump station. All abandoned underground utilities would be capped and decommissioned, and new utility connections would be made to the project site.

The pump station site would be excavated to approximately 10 feet below grade to accommodate the building foundation, pipelines, and pumps. Pump station construction would require excavation of approximately 4,000 cubic yards of material per pump station. A total of 1,850 truck trips would be required for pump station construction including removal of debris and import of materials.

**Truck Trips** – Over the 15-year construction period there would be a total of approximately 51,700 truck trips. There would be a total of approximately 20,000 truck trips for off-haul and approximately 20,300 trips for on-haul associated with pipeline construction, a total of approximately 9,550 truck trips for soil improvements, and approximately 1,850 trips for pump station construction (see Table 7). These trips would be spread out over the multiple phases of construction occurring from 2026 through 2040 and would also be spread out geographically over the entire pipeline alignment and three pump station sites. Pipeline construction would typically generate 10 to 16 one-way truck trips per day including delivery and off-haul of materials, per segment of the alignment under construction. Soil improvements would include 5 to 45 additional one-way truck trips per day in the Lake Merced Boulevard area. Pump station improvements would typically generate 1 to 4 trucks per day with a maximum of 17 trucks per day during the one-month period when foundations are being constructed. Construction worker trips are described in the Construction Workforce section below.

**Table 7. Estimated Construction Truck Trips**

| Project Component                      | Project-wide Truck Trips <sup>a</sup><br>(one-way) | Daily Truck Trips (one-way)                    |
|----------------------------------------|----------------------------------------------------|------------------------------------------------|
| <b>Pipelines and Appurtenances</b>     |                                                    |                                                |
| Pipeline and Appurtenances truck trips | 40,300                                             | 10-16                                          |
| Soil Improvements truck trips          | 9,550                                              | 5-45                                           |
| <b>New Pump Stations</b>               |                                                    |                                                |
| Pump station truck trips               | 1,850                                              | 1-4 typical, up to 17 max<br>(varies by phase) |

<sup>a</sup> Total project trips would occur over multiple construction phases covering an estimated 15-year period.  
SOURCE: SFPUC.

## HAZARDOUS MATERIALS HANDLING

A portion of the Lake Merced Pump Station is undergoing cleanup for a fuel leak associated with underground storage tanks, but the area of previous contamination is not within the area where construction of the project would occur. The SFPUC has prepared a corrective action plan for the San Francisco Bay Regional Water Quality Control Board to address contamination from diesel petroleum hydrocarbons.<sup>17</sup> In addition to this known contamination, there is also the potential that previously unidentified contaminated soils could be encountered during pipeline construction along the project alignment.

Based on current conditions and the location of construction, no contamination is expected to be encountered. As a precaution, the project would adhere to site-specific health and safety protocols developed to address potential environmental conditions. These protocols may include hazardous waste operations training and use of personal protective equipment, pursuant to the requirements of the Occupational Safety and Health Administration. In addition, all soils must be handled, stored, and disposed of in accordance with all local, state, and federal requirements. Soils excavated within the Lake Merced Pump Station would be tested for contaminants and to characterize the soil for disposal, based on licensed landfill and regulatory requirements. Non-hazardous and hazardous materials would be transferred either by truck (or truck and rail) to the nearest landfill that is licensed to accept the waste.

Any contaminated excavated soil encountered during construction of pipelines, appurtenances, or pump stations would be hauled to an appropriately licensed disposal facility. Excavated soils classified as hazardous waste by state and federal standards could be trucked directly to an appropriate facility for disposal or would be trucked approximately 9 miles to the Port of San Francisco transfer facility on Cargo Way (at Pier 94) from where the soils would be transported by rail to an appropriate facility for disposal. The nearest class I landfill (for hazardous waste) is in Kern County, approximately 220 miles from the project site. Any sediment that is not classified as hazardous waste and not reused as backfill would be hauled by truck to the Altamont Landfill in Livermore, California (nonhazardous waste, class II and III landfill). Debris that is not contaminated would be hauled to either the Recology Hay Road Landfill in Solano County or to the Corinda Los Trancos (Ox Mountain) Landfill in Half Moon Bay, California.

## DEWATERING

Any water that accumulates in an open construction trench or in a jacking and receiving shaft as a result of groundwater seepage or precipitation would be dewatered (using a generator-powered pump) and discharged to San Francisco's combined sewer system,<sup>18</sup> under a permit from the SFPUC Wastewater Enterprise.

For pipeline dewatering, see Pipeline Shutdown, Abandonment, and Startup section above.

## SITE ACCESS AND STAGING

Regional access to the project area would be from the north by U.S. Route 101, from the east by Interstate 80 to U.S. 101 to Interstate 280, and from the south via Interstate 280. Major roadways through the project area

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17 SFPUC, Corrective Action Plan, Underground Storage Tank Case Closure, San Francisco Public Utilities Commission, Lake Merced Pump Station, San Francisco, California, SFBWQCB File No: 3801847 (RAL), May 8, 2024.

18 The combined system collects both wastewater and stormwater in the same network of pipelines and treats both before discharge. The project area is served by the City's combined sewer system, except for the Lake Merced Pump Station, which is part of the City's separate sewer system.

include State Route 1 (19th Avenue), State Route 35 (Sloat Boulevard), and Sunset Boulevard. Paved local roadways provide access to all project work areas.

For pipeline construction, most work and staging are expected to occur within a 20-foot-wide construction corridor, and parking lanes would be used for staging as much as possible. The contractor would be allowed to store material onsite per requirements listed in contract specifications. Staging areas would be relocated as necessary to follow pipeline construction as it progresses, block-by-block, along the pipeline route.

In addition, available staging areas at the pump stations are anticipated to be of sufficient size to support the proposed station upgrades and construction, as well as pipeline construction within the immediate vicinity of the pump stations (see [Figure 5](#), [Figure 6](#), and [Figure 8](#)). These staging areas are already paved or graded. Ground-disturbing activities would therefore not be required for staging.

## SITE RESTORATION

Following construction of the pipeline and appurtenances, the work surface area would be restored to its general pre-construction condition in accordance with Public Works standards. Street improvements would be installed during pavement restoration and would include sidewalk restoration, concrete curb, gutter, curb ramps, bike lanes and medians constructed to Public Works standards, as needed. Landscaping restoration at the pump stations would entail in-kind replacement of vegetation consistent with City requirements for planting.<sup>19</sup>

In addition, for any streets that have been reconstructed, repaved, or resurfaced by any entity within the previous 5-year period, Section 2.4.21 of the Public Works Code requires project proponents to obtain a permit or waiver prior to performing any excavation activities.<sup>20</sup> The SFPUC regularly coordinates with Public Works to consider any major repaving projects and coordinate utility work. However, if project construction in some areas would affect recently improved streets, the SFPUC would coordinate with Public Works prior to construction on such streets.

## CONSTRUCTION EQUIPMENT

[Table 5](#) shows the equipment expected to be used during each type of project construction activity. For most pipeline and appurtenance construction activities, the following equipment would be used: trucks, saw-cutting machine, cranes, excavator, vibratory sheetpile driver, loader, backhoe, sweeper, paver and paving equipment, oil spreading truck, soil/concrete compactor, vibratory roller, dewatering pump, welding machine, air compressor, and air fans. For trenchless construction, the following additional equipment would be used: auger drill rig, auger bore motor, boom crane, grouting machine, and pilot/guide tube equipment. In addition, soil improvements would require use of concrete trucks, grout mixers and pumps, injection pipes or tubes, scrapers and tractors. In addition to the list of equipment needed for construction of pipelines and appurtenances, pump station construction would employ a skid steer, forklift, hoe ram, concrete saw, and concrete pump.

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19 SFPUC, Amendment to the Right of Way Integrated Vegetation Management Policy. January 13, 2015.

20 CCSF, Article 2.4: Excavation in the Public Right-of-Way, Public Works Code, [https://sfpublicworks.org/sites/default/files/Excavation\\_Code.pdf](https://sfpublicworks.org/sites/default/files/Excavation_Code.pdf), accessed December 9, 2024.



## CONSTRUCTION WORKFORCE

Up to three segments of the alignment or two segments and a pump station, could be under construction at any given time. Therefore, approximately 15 workers, ranging up to 90 workers total, could be working to construct the project elements at any one time, across multiple project sites.

Specifically, construction activities for pipeline installation would typically require one to three crews of approximately five workers each, and approximately 15 workers may be working concurrently at various locations under construction. In addition, soil improvements as described above, along the pipeline alignment near Lake Merced Boulevard would have one to three crews of 10 workers each.

Pump station improvements at Lake Merced Pump Station would require one to two crews of five workers each. New pump station construction would typically require one to three crews of five workers each. However, during construction of the foundation and building, up to five crews of five workers each could be onsite.

Depending on the project components under construction, approximately 30 to 180 passenger vehicle trips per day (one-way), or 90 round trips, would be required to transport work crew members to and from the various work locations.

## CONSTRUCTION SCHEDULE

As described above in Project Phasing, the initial phases of the project – pipeline construction from Lake Merced Pump Station to Central Pump Station/Merced Manor Reservoir Facility and then to Lawton Street and most improvements at the Lake Merced Pump Station – are anticipated to start construction in 2026 and be completed in 2031.

The subsequent six pipeline segments and pump stations are anticipated to be constructed from 2028 and through 2040. Construction of the new pump station 1 is anticipated to occur for approximately two years between 2030 and 2033, emergency generator upgrades at Lake Merced Pump Station would occur between 2034 and 2035, and construction of the new pump station 2 is anticipated to occur over approximately 2.5 years from 2038 through 2040. Up to three segments of the alignment or two segments and a pump station, could be under construction at any given time. Each segment of the alignment would be brought into operation after it is constructed.

Construction activities are proposed to occur primarily during daytime hours from 7 a.m. to 5 p.m., five days a week on non-holiday weekdays (Monday through Friday). However, because the City of San Francisco allows construction between 7 a.m. and 8 p.m., seven days a week weekend work from 7 a.m. to 5 p.m. could occur as necessary to meet critical project milestones, as well as nighttime work as discussed below. No work would be conducted on holidays.

Construction activities along high-volume streets such as Lake Merced Boulevard may be suspended during peak commute hours from 7 a.m. to 9 a.m. and from 3 p.m. to 7 p.m. as required by the San Francisco Municipal Transportation Agency's (Transportation Agency) Regulations for Working in San Francisco Streets (also known as the "Blue Book").<sup>21</sup> Restrictions apply to work in 19th Avenue from 7 a.m. to 7 p.m. and 19th Avenue and Sloat Boulevard are also subject to additional Caltrans requirements. Restricted construction

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21 San Francisco Municipal Transportation Agency, Regulations for Working in San Francisco Streets, "Blue Book", revised September 26, 2024.

hours could also be required where the project pipelines would cross Muni lines (i.e., L Taraval and N Judah) and/or in the vicinity of Stern Grove or Golden Gate Park, particularly during special events. Construction would be coordinated with the Recreation and Parks Department to avoid construction during major park events to the extent feasible. Additionally, the SFPUC, as standard policy, coordinates in advance with local school districts and would avoid construction during peak drop-off/pick-up times and during school events. Lane closures and other street work would be consistent with the Blue Book.

Nighttime construction work may be required for boring activities associated with the trenchless crossings under Muni light rail lines. Nighttime or weekend construction work may also be needed to expedite the project construction schedule and would be undertaken in compliance with Section 2908 of the Noise Ordinance.

The SFPUC or its contractor would provide nearby residences and adjacent businesses with regular updates regarding the project including the location of project construction, upcoming construction activities and start and end dates for work, temporary travel lane or street closures, and temporary parking lane and sidewalk closures. SFPUC notifications are provided via web page updates, email notices, and/or mail notices and include contact information for inquiries or concerns. The SFPUC mails notices approximately 30 days and 10 days prior to the start of construction work to adjacent residences and businesses. Advanced notification and coordination would be provided for locations where work could temporarily restrict access. Flagging and traffic control would be provided at work areas to ease traffic flow.

## SFPUC STANDARD CONSTRUCTION MEASURES

The SFPUC has adopted standard construction measures to be implemented during construction of every SFPUC project and included in all SFPUC construction contracts to ensure that environmentally responsible practices are applied to all of its projects.<sup>22</sup> Because the measures apply to all SFPUC projects – including projects located within San Francisco and other urban areas as well as projects in rural and natural areas such as SFPUC watershed lands – the measures are necessarily broad. As such, the measures may be tailored to fit specific projects and measures may only apply partially or may not apply at all to specific projects. In addition, these measures may be superseded by more detailed project-specific mitigation measures and/or regulatory permit requirements.

The standard construction measures (as well as any mitigation measures adopted as part of the review process required by the California Environmental Quality Act [CEQA]) are required to be implemented pursuant to the construction contract specifications for all SFPUC projects. The applicability of the standard construction measures to the project is considered under each related resource topic analyses in this Initial Study. **Appendix A** contains the Mitigation Monitoring and Reporting Program for the project and **Appendix B** lists SFPUC standard construction measures.

## Operation and Maintenance

The project is designed to operate under a range of scenarios. Operational scenarios for firefighting, generally described as either normal or emergency (i.e., elevated or catastrophic conditions), have been developed for illustrative purposes to explain how the project could operate under various circumstances.

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22 San Francisco Public Utilities Commission, SFPUC Standard Construction Measures, Memorandum from Harlan L. Kelly, Jr., general manager, to Michael Carlin, Juliet Ellis, Barbara Hale, Kathryn How, Tommy Moala, Steven Ritchie, and Eric Sandler, July 1, 2015.

## NORMAL OPERATIONS

Under normal operations, the new pipelines would be used as a low-pressure potable water transmission system, connecting to the existing low-pressure municipal (potable) water supply system. The project would provide increased reliability, resiliency, and redundancy to the existing low-pressure water distribution system under normal operations. Similar to existing conditions and separately from the project, firefighting from the existing low-pressure hydrants and distribution system would continue.

During normal operations, diesel pumps at the new emergency pump station 1 and pump station 2 would not be used. However, these pumps would be exercised approximately one hour per month (or a total of about 72 hours per year for all six pumps) because mechanical equipment needs to be operated regularly to ensure that it stays in good working order. At Lake Merced Pump Station, the new and existing emergency generators would continue to be exercised once per month for approximately 15 minutes without load and exercised twice annually with full load for approximately four hours for a total of approximately 11 hours per year.

## EMERGENCY OPERATIONS

For illustrative and analytical purposes, emergency operations are described for both “elevated emergencies” and “catastrophic emergencies.” Elevated emergencies would occur when the existing low-pressure firefighting system may not be adequate to fight fires, such as a multi-alarm fire. Catastrophic emergencies could result from a major earthquake and presume a loss of potable water supply (due to a loss of pressure in the low-pressure system, which is presumed to have suffered major or multiple ruptures) and possibly the loss of PG&E power to the pump stations.

Under both elevated and catastrophic emergency operations, the new high-pressure pipelines would be separated from the low-pressure system via isolation valves, and the new pump stations would be activated to provide a high-pressure water supply for fighting fires. Note, it would not be possible to operate the new pipeline at high pressure until the new pump stations are constructed. The existing pumps and emergency generators at the Lake Merced Pump Station, and the new pump station 1 and pump station 2– once they are constructed – would run continuously, day and night, to support firefighting activities.

In a catastrophic emergency, the project upgrades at the Lake Merced Pump Station would reduce the time it would take to utilize the non-potable water supply from Lake Merced, if needed. In addition, while only one lake draw pump can currently be operated on the backup power supply, the addition of a new emergency generator would allow for both pumps to be operated simultaneously on backup power supply, in the event that PG&E power is not available. Under existing conditions both pumps can be operated when PG&E power is available. Regardless, the project would not increase the pumping capacity of the existing lake draw pumps.

If lake water is used for firefighting purposes, which would only occur as a last resort and would occur only while the new high-pressure system is isolated from the existing low-pressure system, the new high-pressure pipeline would be disinfected prior to being brought back into use for potable water distribution. This disinfection process would be similar to the existing planned disinfection processes for the event that lake water were to be used, which would entail an oxidizing chemical such as chlorine to sanitize the internal surfaces of the new pipeline, as regulated by the California Department of Public Health and consistent with

the SFPUC standard operating procedures for disinfection.<sup>23</sup> In this case, the new pipeline would be flushed after disinfection until chlorine residuals reach the normal system level. Any resulting discharges to the sanitary sewer system would be performed in accordance with the Waste Discharge Requirements stipulated in the State Water Quality Control Board Order WQ 2014-0194-DWQ (General Order No. CAG140001).<sup>24</sup>

## MAINTENANCE

As each segment of the project is constructed, the SFPUC would be responsible for the routine maintenance of the new pipeline, valves, vaults, pumps, appurtenances, and hydrants to ensure proper operation. Maintenance practices would be similar to existing SFPUC pipelines and appurtenances, pump stations, and other related facilities and would be performed by existing staff. Operators would conduct leak repairs for pipes as needed and would exercise valves, perform pressure tests, and access the valve vaults for maintenance approximately once a year. A crew of one or two people with one maintenance vehicle, once per month may be required.

## Project Permits and Approvals

This initial study is intended to provide the information and environmental analysis necessary to assist the public agency decisionmakers in considering the approvals necessary for the planning, development, construction, operations, and maintenance of the project. The permits and approvals anticipated to be required from state, regional, and local agencies are listed below.

In accordance with article VIIIB section 8B.121 of the City of San Francisco Charter, the SFPUC has exclusive charge of the construction, management, supervision, maintenance, extension, expansion, operation, use and control of all water, clean water and energy supplies and utilities of the city. The *exclusive charge* means that the San Francisco Board of Supervisors may not adopt ordinances that interfere with the SFPUC's responsibilities, but the SFPUC must still comply with all applicable local ordinances. Therefore, the SFPUC must meet the substantive requirements of city ordinances that apply to other city departments, but SFPUC does not need to obtain the permits normally required by the ordinances.

### Bay Area Air District<sup>25</sup>

- Authority to Construct/Permit to Operate for stationary source (i.e., new generator and diesel pumps)

### Caltrans

- Encroachment permit and access permit for work in Caltrans right-of-way along 19th Avenue and Sloat Boulevard

### Coastal Commission

- Coastal Development Permit for construction within the Coastal Zone

### State Water Resources Control Board

- Waiver for potable water main separation requirements for new water facilities near non-potable pipelines at Lake Merced Pump Station

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<sup>23</sup> SFPUC, Manual of Procedures for Disinfection/Dechlorination and Related Tasks. Revised April 2011.

<sup>24</sup> State Water Resources Control Board, Statewide National Pollutant Discharge Elimination System (NPDES) Permit for Drinking Water System Discharges to Waters of the United States. Order WQ 2014-0194-DWQ (General Order No. CAG140001), 2014.

<sup>25</sup> Formerly the Bay Area Air Quality Management District



**Regional Water Quality Control Board, San Francisco Bay Region**

- Approval of soil management plan and health and safety plan for excavation of contaminated soils (as applicable)
- **San Francisco Public Utilities Commission**
  - Adoption of MND, CEQA findings, and mitigation monitoring and reporting program
  - Approval of the project
- **Other City Departments**
  - SFPUC ~~would~~ will consult/coordinate with San Francisco departments, including without limitation Public Works, Department of Building Inspection, Department of Public Health, San Francisco Arts Commission, and the Transportation Agency, to ensure that soil disturbance and site mitigation, street and sidewalk improvements, on-street parking modifications, dust control, noise control, and building construction complies with the substantive requirements of applicable local laws, ~~and with the planning department to ensure that areas within the Local Coastal Program are permitted appropriately. The SFPUC would also coordinate with the Recreation and Parks Department for any work within Golden Gate Park or other parks managed by the department related to the pipeline alignment, paving restoration, tree planting and protection, and construction schedule. Project improvements within Golden Gate Park would be reviewed and approved by the Recreation and Park Commission.~~

## B. Project Setting

### Project Area and Surrounding Land Uses

The project pipeline alignment extends from Lake Merced in the south to Lincoln Park and the Presidio in the north and is bounded by Park Presidio Boulevard and 19th Avenue (also referred to as State Route 1) on the east and the Great Highway on the west. The project would extend through the Outer Richmond, Outer Sunset, and Parkside neighborhoods and part of the Lakeshore neighborhood. In this initial study, project area refers to the entire project footprint, including the whole project pipeline alignment and the three pump station sites. Specific locations where project components would be constructed are referred to as project sites, within the overall project area.

The project alignment is entirely within the public right-of way as it extends through primarily residential and neighborhood commercial areas. The alignment is adjacent to Harding Park Golf Course, TPC Fleming Golf Course, Pine Lake Park, Sigmund Stern Recreation Grove (Stern Grove), and Lincoln Park and Golf Course, West Sunset Playground and passes through Golden Gate Park. Schools near the alignment include San Francisco State University, Lowell High School, Lakeshore Alternative Elementary, Diane Feinstein Elementary, Ulloa Elementary, St. Gabriel Catholic Elementary School, A.P. Giannini Middle School, Sunset Elementary School, Holy Name School, St. Ignatius College Preparatory School, Abraham Lincoln High School, Francis Scott Key Elementary, Lawton Alternative School, and Presidio Middle School.

The Lake Merced Pump Station is adjacent to Lake Merced and west of the Parkmerced Apartments. The Harding Park Golf Course is immediately north of the pump station.

The project site for pump station 1, the emergency pump station at the existing Central Pump Station/Merced Manor Facility, is south of Stern Grove and adjacent to the existing pump station, Merced Manor Reservoir, and surrounding residential land uses. The Merced Manor Reservoir is used by the public for walking and jogging.

The pump station 2 site at the Sunset Reservoir is adjacent to the reservoir. The preferred site on the east side of the reservoir is used for reservoir maintenance. An alternative location for the emergency pump station 2 (pump station 2 project variant) at the northwest corner of the reservoir is also under consideration (see [Figure 8](#)) and is used informally by the public as a park. There are residences on all four streets surrounding the reservoir and Abraham Lincoln High School is adjacent to the southeast corner of the reservoir.

### Cumulative Context

The CEQA Guidelines section 15130(b)(1) provides two methods for cumulative impact analysis: the “list-based approach” and the “projections-based approach.” The list-based approach uses a list of projects within approximately a 0.25-mile radius of the project site producing closely related impacts that could combine with those of a project to evaluate whether the project would contribute to significant cumulative impacts. The projections-based approach uses projections contained in a general plan or related planning document to evaluate the potential for cumulative impacts. This analysis employs both the list-based and projections-based approaches, depending on which approach best suits the resource topic being analyzed. The following factors were used to determine an appropriate list of individual projects to be considered in this cumulative analysis:

- **Similar Environmental Impacts.** A relevant project contributes to effects on resources that are also affected by the project. A relevant future project is defined as one that is “reasonably foreseeable,” such as a project for which an application has been filed with the approving agency or for which funding has been approved.
- **Geographic Scope and Location.** A relevant project is one in the geographic area where effects could combine with those of the project. The geographic scope varies on a resource-by-resource basis. For example, the geographic scope for evaluating cumulative effects on air quality consists of the affected air basin.
- **Timing and Duration of Implementation.** Effects associated with activities for a relevant project (e.g., short-term construction or long-term operations) would likely coincide with the related effects of the project.

The initial study evaluates whether the proposed project, in combination with the cumulative projects in the vicinity, could result in significant cumulative impacts. Listed below are reasonably foreseeable projects within the project vicinity (approximately 0.25 miles) that are being considered for cumulative impacts. Because the project would be constructed in phases over a number of years, the list includes projects that have undergone or are currently undergoing environmental review by the City of San Francisco (for which the planning department has a project application on file), are being developed by the SFPUC, or are proposed by other lead agencies such as Caltrans or the California State University system. Refer to [Figure 12](#) for the locations of the cumulative projects.

- Case No. 2021-012028ENV: Stonestown Development Project would entail the following: demolishing an existing parking garage, vacant theater, CitySports building, and commercial building; developing up to 3,491 residential units, up to 160,000 square feet of retail sales and service use space, up to 96,000 square feet of non-retail sales and service use, and approximately 63,000 square feet of institutional uses, approximately 4,861 parking spaces and approximately 6 acres of open space. Construction began in 2024, will be ongoing in phases, and is estimated to occur over the next 25 years.
- Case No. 2019-020115ENV: Ocean Beach Climate Change Adaptation Project would include closing the Great Highway between Sloat and Skyline boulevards, reshaping beach and bluff and planting native vegetation, improving public access, constructing buried wall, and replenishing sand. Construction will occur from 2027 to 2031.
- Case No. 2022-012254ENV: St. Ignatius College Preparatory School (St. Ignatius), Academic Building Addition at 2001 37th Avenue would entail demolition of five buildings and construction of 182,850-square-foot addition to existing main academic building at St. Ignatius. Construction will occur from 2024 to 2026.
- Case No. 2008.0021E: Parkmerced Project is a long-term mixed use development program to comprehensively replan and redesign site, increase residential density, provide new commercial and retail services, and improve utilities; 1,538 existing apartments to be demolished and replaced, with an additional 5,679 net new units added, resulting in a total of about 8,900 units. The construction period is 2016 to 2040.

Figure 12. Cumulative Projects (revised)



SOURCE: SFPUC, San Francisco Environmental Planning, Woodard & Curran, ESRI



- Case No. 2019-014146ENV: Lake Merced West Project is a recreational facility on approximately 11 acres located at 520 John Muir Drive, on the southwest side of Lake Merced). Construction is ongoing until 2026.
- Case No. 2023-005370ENV: PG&E Power Asset Acquisition Project would include work on overhead and underground distribution lines in discrete areas along the San Francisco-San Mateo County border to separate the electrical systems for San Francisco and San Mateo County customers and to ensure electrical system reliability. Overall project construction would occur over three years, beginning in 2026 or later. Because work associated with this project is dispersed in nature and of fairly minor extent the project is not shown in [Figure 12](#).
- Caltrans: Pavement Rehabilitation 19th Avenue would rehabilitate pavement and upgrade facilities to Americans with Disabilities Act standards between San Francisco State University and Golden Gate Park. Construction is scheduled for 2025 to 2027.
- City of Daly City: Vista Grande Drainage Basin Project would divert stormwater from the Vista Grande Watershed to South Lake Merced, manage stormwater transport to the Pacific, and replenish Lake Merced. The project includes construction of culverts, a diversion structure, an outfall into Lake Merced, and ancillary structures to allow stormwater to be discharged either to the Pacific Ocean or Lake Merced. Construction is anticipated to begin in 2026 and would take 24 to 44 months.
- SFPUC: Merced Manor Project entails seismic strengthening and repair of the Merced Manor Reservoir roof structure to ensure the function of the reservoir and the ability to deliver water to the Merced Manor zone after a major earthquake. Construction will possibly occur from 2027 to 2030.
- SFPUC: Sunset Reservoir Projects would include South Reservoir South Basin seismic strengthening and repair of the roof structure and new chlorine building. Construction will possibly occur from 2030 to 2035.

## C. Compatibility with Existing Zoning and Plans

|                                                                                                                                                                                       | Applicable                          | Not Applicable                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
| Discuss any variances, special authorizations, or changes proposed to the planning code or zoning map, if applicable.                                                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Discuss any conflicts with adopted plans and goals of the City or region, if applicable.                                                                                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Discuss any approvals and/or permits from city departments other than the planning department or the Department of Building Inspection, or from regional, state, or federal agencies. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

This section provides a general description of land use plans and policies that apply to the project and discusses any potential inconsistencies. Project consistency with a particular plan is decided at the time of project approval by the agency charged with that determination. Land use plans typically contain numerous policies that emphasize differing legislative goals; an interpretation of consistency requires decision makers to balance the relevant policies. The board or commission responsible for implementing the plan or policy determines the meaning of the policy as well as whether an individual project satisfies the policy at the time the board considers approval of the project.

The project, all of which is located with the City and County of San Francisco, entails construction and operation of a dual-purpose, earthquake-resistant high-pressure water transmission pipeline as well as emergency pump stations to ensure reliable water supply for potable and emergency firefighting purposes in western San Francisco. The proposed work would occur largely within public rights-of-way (i.e., city streets and sidewalks) with some work at three existing SFPUC facilities that are zoned as Public Use Districts. No variances, special authorizations, or changes to the planning code or zoning map are proposed as part of this project; therefore, these issues are not applicable and not discussed further.

## City and County of San Francisco Plans and Policies

### SAN FRANCISCO GENERAL PLAN

The *San Francisco General Plan* (General Plan)<sup>26</sup> provides general policies and objectives to guide land use decisions in the city. The General Plan incorporates the policies of the local coastal program, which are detailed in the Western Shoreline Plan. The coastal zone includes the Lake Merced area, and Golden Gate Park west of 40th Avenue. Any conflicts between the project and policies that relate to physical environmental issues are discussed in Section E, Evaluation of Environmental Effects. The compatibility of the project with general plan policies that do not relate to physical environmental issues would be considered by decision-makers as part of their decision to approve or disapprove the project. The project, which entails construction and operation of infrastructure facilities, would be constructed in areas where such facilities already are located (e.g., public right-of-way and at SFPUC facilities sites) and would not introduce incompatible land uses to the area or otherwise conflict with any general plan policies or objectives. Thus, the project would not obviously conflict with the general plan or any other adopted policy.

26 San Francisco Planning Department, San Francisco General Plan, June 27, 1996, <http://generalplan.sfplanning.org>.

## PROPOSITION M – THE ACCOUNTABLE PLANNING INITIATIVE

In November 1986, the San Francisco voters approved Proposition M, the *Accountable Planning Initiative*, which added Section 101.1 to the planning code to establish eight priority policies. These policies, as well as the sections of this environmental evaluation that address the environmental issues associated with the policies (if applicable), are as follows:

1. Preservation and enhancement of neighborhood-serving retail uses
2. Protection of neighborhood character
3. Preservation and enhancement of affordable housing
4. Discourage use of commuter automobiles
5. Protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership
6. Maximization of earthquake preparedness (Section E.16, Geology and Soils)
7. Landmark and historic building preservation (Section E.4, Cultural Resources)
8. Protection of open space (Section E.10, Wind; Section E.11, Shadow; and Section E.12, Recreation)

Prior to issuing a permit for any project that requires an initial study under CEQA, or issuing a permit for any demolition, conversion, or change of use, and prior to taking any action that requires a finding of consistency with the general plan, the city is required to find that the project would be consistent with the priority policies. The project would does not appear to conflict with the eight priority policies because the project, which would improve the reliability of water supply for potable and emergency firefighting uses would:

- Have no long-term effect on neighborhood-serving retail uses, neighborhood character, or affordable housing
- Have no long-term effect on the use of commuter automobiles
- Directly address issues of earthquake preparedness
- Have no adverse effect on landmark or historic buildings
- Not include commercial office development, nor would it affect resident employment or business ownership
- Have no long-term effect on open space

## SAN FRANCISCO BICYCLE PLAN

In August 2009, the board of supervisors approved the *San Francisco Bicycle Plan*<sup>27</sup> (bicycle plan), which includes a citywide bicycle transportation plan comprising a policy framework and a network improvement document. The bicycle plan contains objectives and identifies policy changes to enhance bicycle access and safety with respect to San Francisco’s “bike-ability.” It also describes the existing bicycle route network (a series of interconnected streets in which bicycling is encouraged) and identifies gaps within the citywide bicycle route network that require improvement. The final environmental impact report for the 2009 bicycle plan assessed 56 short-term and long-term bicycle improvement projects. The bicycle plan identifies existing bicycle routes throughout San Francisco. However, bicycle routes would not be substantially

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27 San Francisco Municipal Transportation Agency, San Francisco Bicycle Plan, June 26, 2009.

affected by temporary construction activities within roadways or within existing pump stations, as proposed by the project. See Section E.6, Transportation and Circulation, below, for more information on this topic.

## BETTER STREETS PLAN

The *Better Streets Plan*,<sup>28</sup> adopted in 2010, presents a unified set of standards, guidelines, and implementation strategies to govern how the city designs, builds, and maintains its pedestrian and streetscape facilities. The Better Streets Plan contains goals, policies, and design guidelines to improve pedestrian safety and accessibility, create a unified streetscape design, integrate pedestrians with transit, and improve street ecology and greening. Goals and policies applicable to the project include Goal 9: “San Francisco’s streets will be designed for ease of use and access to destinations for all populations, particularly those with visual or mobility impairments,” and Policy 9.3: “Maintain accessibility around construction zones per city standards.” Access around project construction zones would be maintained through alternative pedestrian access routes and detours with signage. Analysis of potential project effects of construction-period street and sidewalk closures on pedestrians is analyzed in Section E.6, Transportation and Circulation, of this initial study. The project would not conflict with the Better Streets Plan.

## SFPUC Plans and Policies

The SFPUC’s 2020 Strategic Plan<sup>29</sup> provides a framework for planning, managing, and evaluating SFPUC-wide performance, taking into account the long-term economic, environmental, and social impacts of the SFPUC’s business activities. This plan consists of a “Durable Section” that contains goals, objectives, and performance indicators to implement the SFPUC’s vision and values. The goals and objectives are then used to drive the plan’s “Dynamic Section,” which contains specific action items, targets, measures, and budgeting. The SFPUC uses the plan to evaluate its performance semiannually to help measure progress on an annual basis.

The project would include improvements to the water system needed to provide reliable potable and emergency firefighting water supply to customers in San Francisco. As a result, the project would not conflict with the Strategic Plan.

## Regional Plans and Policies

### CLEAN AIR PLAN

The Bay Area Air District’s 2017 Clean Air Plan demonstrates how the San Francisco Bay Area will reduce emissions and concentrations of harmful air pollutants, reduce greenhouse gas (GHG) emissions, achieve compliance with state ozone standards, and reduce the transport of ozone and ozone precursors to neighboring air basins.

The project would include appropriate measures that would reduce pollutant emissions generated by project construction. Therefore, the project would not disrupt or hinder implementation of control measures identified in the 2017 Clean Air Plan or otherwise conflict with the 2017 Clean Air Plan. Pollutant emissions

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28 City and County of San Francisco, San Francisco Better Streets Plan, adopted December 7, 2010.

29 San Francisco Public Utilities Commission, 2020. Strategic Plan, August 2016. Available online at <https://www.sfpuc.org/about-us/policies-plans/agency-strategic-plan>, Accessed July 10, 2025



generated by construction and operation of the project are analyzed in Section E.8, Air Quality, and Section E.9, Greenhouse Gas Emissions, of this initial study.

## **WATER QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY BASIN**

The San Francisco Regional Water Quality Control Board's *Water Quality Control Plan for the San Francisco Bay Basin*<sup>30</sup> (basin plan) guides water quality control planning in the San Francisco Bay Basin. The basin plan designates beneficial uses and water quality objectives for waters of the state, including surface waters and groundwater. It also includes implementation programs to achieve water quality objectives. As described in Section E.17, Hydrology and Water Quality, of this initial study, the project would not result in substantial water quality effects; thus, the project would not conflict with the basin plan.

## **Approvals and Permits**

See Project Permits and Approvals in Section A, Project Description, for a list of anticipated approvals from federal, state, and local agencies.

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30 California Regional Water Quality Control Board, San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin, approved November 5, 2019, [https://www.waterboards.ca.gov/sanfranciscobay/basin\\_planning.html](https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html). Accessed July 10, 2025.

## D. Summary of Environmental Effects

The project could potentially result in adverse physical effects on the environmental resources checked below, and where those impacts would be significant or potentially significant, CEQA requires identification of mitigation measures to reduce the severity of the impacts to a less-than-significant level to the extent feasible. This initial study presents a more detailed checklist and discussion of each environmental topic, unless otherwise noted below.

- |                                                               |                                                        |                                                                        |
|---------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------|
| <input type="checkbox"/> Land Use and Planning                | <input type="checkbox"/> Greenhouse Gas Emissions      | <input type="checkbox"/> Hydrology and Water Quality                   |
| <input type="checkbox"/> Aesthetics                           | <input type="checkbox"/> Wind                          | <input type="checkbox"/> Hazards and Hazardous Materials               |
| <input type="checkbox"/> Population and Housing               | <input type="checkbox"/> Shadow                        | <input type="checkbox"/> Mineral Resources                             |
| <input checked="" type="checkbox"/> Cultural Resources        | <input type="checkbox"/> Recreation                    | <input type="checkbox"/> Energy                                        |
| <input checked="" type="checkbox"/> Tribal Cultural Resources | <input type="checkbox"/> Utilities and Service Systems | <input type="checkbox"/> Agriculture and Forestry Resources            |
| <input type="checkbox"/> Transportation and Circulation       | <input type="checkbox"/> Public Services               | <input type="checkbox"/> Wildfire                                      |
| <input checked="" type="checkbox"/> Noise                     | <input type="checkbox"/> Biological Resources          | <input checked="" type="checkbox"/> Mandatory Findings of Significance |
| <input type="checkbox"/> Air Quality                          | <input checked="" type="checkbox"/> Geology and Soils  |                                                                        |

This initial study examines the project to identify potential effects on the environment. For each item on the initial study checklist, the evaluation in Section E, Evaluation of Environmental Effects, considers the impacts of the project both individually and cumulatively. All items on the initial study checklist that are checked “Less than Significant Impact with Mitigation Incorporated,” “Less than Significant Impact,” “No Impact,” or “Not Applicable” in Section E indicate that, upon evaluation, the planning department has determined that the project could not have a significant adverse environmental effect relating to that issue. A discussion is included for all issues except for agriculture/forestry resources, mineral resources and wildfire, which are not applicable to the project area or for which the project was determined to have no impact. For all of the items checked No Impact or Not Applicable without discussion, the conclusions regarding potential significant adverse environmental effects are based upon field observation, staff experience and expertise on similar projects, and/or standard reference material available within the planning department, such as the *Transportation Impact Analysis Guidelines for Environmental Review* or the California Natural Diversity Database and maps, published by the California Department of Fish and Wildlife. The items checked above have been determined to be “Less than Significant with Mitigation Incorporated.”

Throughout this document the impacts of the project and its variants for pipeline alignments and pump station locations are fully evaluated and the analysis only calls out specific aspects of the project or variant where they differ. Specifically, the evaluation of the pipeline alignment considers the impacts of the project alignment and the Sunset Boulevard corridor project variant for the pipeline alignment, which could place pipelines and appurtenances along 36th Avenue, Sunset Boulevard, and/or 37th Avenue. The analysis considers a new emergency pump station 1 at the existing Central Pump Station/Merced Manor Reservoir facility at Sloat Boulevard between 23rd and 22nd avenues. The analysis also considers two potential locations for the new emergency pump station 2 at the Sunset Reservoir facility – the proposed location at 24th Avenue near Pacheco Street and the project variant location at 28th Avenue and Ortega Street. Refer to [Figure 1](#) for the location of the project and its variants.

The impact analysis considers effects of construction and normal operation. Although the project is designed to operate during emergencies, the frequency, duration, and scale of any circumstances that would require the project to operate under emergency conditions cannot be reasonably predicted or quantified. Thus, any attempt to analyze potential impacts on the physical environment would be speculative.

## E. Evaluation of Environmental Effects

### E.1 Land Use and Planning

| Topics:                                                                                                                                                                                         | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>LAND USE AND PLANNING.</b> Would the project                                                                                                                                                 |                                |                                                    |                                     |                          |                          |
| a) Physically divide an established community?                                                                                                                                                  | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Cause a significant physical environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Impact LU-1: The proposed project would not physically divide an established community. (*Less than Significant*)**

#### Construction

Upgrades at the Lake Merced Pump Station and construction of the new emergency pump stations at the Central Pump Station/Merced Manor Reservoir facility and Sunset Reservoir facility would take place entirely within existing SFPUC facilities and would thus not divide an established community. For construction of the pipeline and appurtenances, trenching activities and staging would generally take place in the parking lane and one travel lane of each street. The project could require temporary closure of streets and sidewalks during construction, which could impede pedestrian and vehicle traffic. While city blocks could be closed temporarily during pipeline construction, based on traffic needs, local access and detours for residents and businesses would be maintained throughout construction. The SFPUC has adopted Standard Construction Measure 4, which is included in all of its construction contracts and are required to be implemented pursuant to the construction contract specifications. Included in these standard construction measures are traffic control measures to maintain vehicle and pedestrian circulation on streets affected by construction such as, but not limited to, the installation of road work ahead signs, detour signs, flaggers. With implementation of these standard measures, construction would not divide the existing community.

#### Operation

Physical division of an established community typically involves construction of a physical barrier to neighborhood access, such as a new freeway, or removal of a means of access, such as a bridge or a roadway. The majority of the project would be underground (i.e., pipelines, valves, and concrete vaults) and thus would not permanently divide an established community. In addition, the new, permanent aboveground project components, such as existing pump station upgrades and new emergency pump stations and electrical cabinets would be located at existing SFPUC facilities or within the public right-of-way and would not block access between adjacent land uses or physically divide an established community.

Therefore, the construction and operation of the project would not physically divide an established community. Impacts would be less than significant. No mitigation would be required.

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**Impact LU-2: The proposed project would not cause a significant physical environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (*Less than Significant*)**

Land use impacts could be significant if a project were to conflict with any plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact. Environmental plans and policies are those that directly address environmental issues and/or contain targets or standards that must be met to preserve or improve characteristics of the city’s physical environment.

Applicable plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect include the Bay Area Air District’s *2017 Clean Air Plan*, the San Francisco Planning Department’s *2023 Greenhouse Gas Reduction Strategy Update*, and the San Francisco Bay Regional Water Quality Control Board’s *San Francisco Basin Plan*.<sup>31</sup> As discussed in Section E.8, Air Quality, Section E.9, Greenhouse Gas Emissions, Section E.15, Biological Resources, and Section E.17, Hydrology and Water Quality, the project would not conflict with the plans, policies, or regulations adopted for avoiding or mitigating an environmental effect. Applicable local land use policies include the San Francisco General Plan,<sup>32</sup> which describes the comprehensive long-term land use policies for the city. The general plan consists of the following 10 elements that set forth goals, policies, and objectives for the physical development of San Francisco: housing, commerce and industry, recreation and open space, transportation, urban design, environmental protection, community facilities, community safety, arts, and air quality.

### **Construction and Operation**

The project would not substantially conflict with the relevant objectives and policies:

Environmental Protection Objective 4: “Assure that the ambient air of San Francisco and the Bay Region is clean, provides maximum visibility, and meets air quality standards”; Policy 4.1: “Support and comply with objectives, policies, and air quality standards of the Bay Area Air Quality Management District.”

Air Quality Element Objective 5: “Minimize particulate matter emissions from road and construction sites”; Policy 5.1: “Continue policies to minimize particulate matter emissions during road and building construction and demolition.”

These objectives and policies are relevant to the project because the use of construction equipment during the project would, if not properly managed, create dust and result in emissions of *criteria air pollutants*. The SFPUC would require the construction contractor to implement site-specific best management practices to control dust and emissions of criteria air pollutants in accordance with the City’s Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008). The SFPUC would also require compliance with the Clean Construction Ordinance (Ordinance 28-15, effective April 19, 2015), which requires public projects to reduce emissions throughout the city as well as providing more stringent emissions requirements at

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31 Bay Area Air Quality Management District, *Spare the Air Cool the Climate*, Final 2017 Clean Air Plan, April 19, 2017, <https://www.baaqmd.gov/en/plans-and-climate/air-quality-plans/current-plans>, accessed September 25, 2024; San Francisco Planning Department, *2023 Greenhouse Gas Reduction Strategy Update*, October 2023, <https://sfplanning.org/project/greenhouse-gas-reduction-strategies>, accessed September 23, 2024; San Francisco Bay Regional Water Quality Control Board, *San Francisco Basin Plan* July 22, 2024, [https://www.waterboards.ca.gov/sanfranciscobay/basin\\_planning.html](https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html) Accessed December 11, 2024.

32 City of San Francisco. *General Plan Land Use Index*. 2011. [https://generalplan.sfplanning.org/Land\\_Use\\_Index\\_San\\_Francisco\\_General\\_Plan.pdf](https://generalplan.sfplanning.org/Land_Use_Index_San_Francisco_General_Plan.pdf) Accessed December 11, 2024



construction sites in areas that have been classified as within the *air pollutant exposure zone* (the area where air modeling indicates higher levels of air pollution). Compliance with the Clean Construction Ordinance is analyzed in detail in Section E.8, Air Quality, of this initial study. As such, the project would be consistent with objectives and policies for minimizing particulate matter emissions due to compliance with the Bay Area Air District’s air quality standards, the San Francisco Dust Control Ordinance, and the Clean Construction Ordinance. The project would not conflict with the environmental protection and air quality elements of the general plan, nor would it substantially conflict with any applicable general plan goals, policies, and objectives.

The project would involve the construction and operation of new pipelines and appurtenances, pump station improvements, and new pump stations at existing SFPUC facilities for the purpose of improved potable water circulation as well as to improve the firefighting capacity in the western portion of San Francisco. SFPUC seeks to operate and maintain the system to complement and improve the existing firefighting and water transmission system in the city. Because the project would comply with all applicable environmental regulations, the project would not cause a significant physical environmental impact due to a conflict with any applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The impact would be less than significant. No mitigation would be required.

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**Impact C-LU-1: The proposed project, in combination with cumulative development projects, would not result in a significant cumulative impact related to land use and planning. (No Impact)**

The cumulative context for land use effects is typically localized within the immediate project vicinity or at the neighborhood level. Cumulative development in the project vicinity (within 0.25 miles of the project area) would include the projects listed in Section B, Project Setting. Cumulative development projects would entail construction of new infill residential, commercial, educational, public works, and resiliency uses in the project vicinity.

The cumulative development projects would not physically divide an established community by constructing a physical barrier to neighborhood access or removing a means of access. Like all projects proposed in San Francisco, the cumulative development projects are required to comply with applicable plans, policies, and regulations, including those adopted for avoiding or mitigating an environmental impact, such as the 2017 Clean Air Plan, the 2023 San Francisco Greenhouse Gas Reduction Strategy Update, and the San Francisco Basin Plan.

Therefore, the project, in combination with cumulative development projects, would not result in a significant cumulative impact related to the physical division of an established community or a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact. No cumulative land use impact would occur (no impact).

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## E.2 Aesthetics

| Topics:                                                                                                                                                                                                                                                                                                                                                                      | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>AESTHETICS.</b> Would the project                                                                                                                                                                                                                                                                                                                                         |                                |                                                    |                                     |                          |                          |
| a) Have a substantial adverse effect on a scenic vista?                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?                                                                                                                                                                                                                     | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?                                                                                                                                                                                                                                                    | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Impact AE-1: The proposed project would not have a substantial adverse effect on a scenic vista. (*Less than Significant*)

A scenic vista is generally an expansive, publicly accessible view that is recognized and valued for its scenic quality, and is typically available from vista points, designated scenic highways, or parks. A project would have a significant effect on scenic vistas if it were to obstruct views from public areas or substantially degrade important public view corridors.

There are no vista points or designated scenic highways along the pipeline alignment or at the proposed pump station sites, though there are two eligible state highways: Sloat Boulevard and 19th Avenue. The pipeline alignment also coincides with portions of the San Francisco 49-Mile Drive, which follows Lake Merced Boulevard, Sunset Boulevard (a variant for the pipeline alignment) and various roads in Golden Gate Park. The 49-Mile Scenic Drive was created by San Francisco's Downtown Association in 1938 to highlight San Francisco's beauty and to promote the city as a tourist destination. Streets along the scenic roadway are recognized for their aesthetic value. There are publicly accessible scenic views within Golden Gate Park and from Lake Merced Boulevard, which provides views of Lake Merced and Harding Park. Most of the views along the pipeline alignment are limited to adjacent urban areas, with occasional views of the ocean from 42nd Avenue.

### Construction

Because the majority of project facilities consist of underground pipelines, most of the visual impacts associated with the project would be temporary and would occur during the construction phase. During

construction, views within Golden Gate Park, views of the nearby ocean from the Sunset and Richmond Districts, and views of Lake Merced and golf course green space from Lake Merced Boulevard could be temporarily altered by construction equipment such as cranes, excavators, and trucks, but no scenic views or vistas would be permanently affected.

Construction activities, equipment and materials, and vehicles at the project sites would not have a significant effect on scenic views or vistas because project construction sites are primarily within low-lying areas (e.g. work at Lake Merced Pump Station would be screened from Lake Merced Boulevard by topography), at existing SFPUC facilities, and along existing streets and generally not visible from scenic viewpoints. Potential construction impacts on scenic vistas and resources would be further minimized with implementation of SFPUC Standard Construction Measure 8 (Visual and Aesthetic Considerations), which requires construction sites to be maintained in a clean and orderly state and returned to their general pre-project condition after construction. As a result, project construction would not have a substantial adverse effect on a scenic vista. Impacts on scenic vistas would be less than significant. No mitigation would be required.

### Operation

Once the project is completed, most of the project components – such as vaults, valves, pipelines, and associated soil improvements would be located underground, and disturbed areas would be restored to pre-construction conditions. The small aboveground appurtenances associated with the pipeline (cabinets, hydrants, air valves, and sampling stations) would be similar to existing appurtenances that are located along sidewalks throughout the city and are of such small scale that they would not affect scenic views or vistas. The Lake Merced Pump Station upgrades would be within existing buildings. The new emergency pump stations 1 and 2 at the Central Pump Station/Merced Manor Reservoir facility and Sunset Reservoir facility would be located adjacent to existing infrastructure and would not significantly obstruct a scenic vista. Therefore, impacts during project operation related to scenic vistas would be less than significant. No mitigation would be required.

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### **Impact AE-2: The proposed project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. (*Less than Significant*)**

The project area does not involve construction on any officially designated scenic highways; however, it does include construction on two eligible state highways: Sloat Boulevard and 19th Avenue from which scenic resources including the historic Central Pump Station and parks with trees such as Stern Grove are visible. The pipeline alignment is within or adjacent to portions of the San Francisco 49-Mile Drive, which follows Lake Merced Boulevard, Sunset Boulevard (a variant for the pipeline alignment) and various roads in Golden Gate Park. Along those roads there are views of Lake Merced and Harding Park from Lake Merced Boulevard, and views within Golden Gate Park. The potential impacts of the project at these locations are described below.

### Construction

Construction would not damage any scenic resources in the project area because construction activities would be temporary, historic buildings such as the Central Pump Station would be protected (see evaluation of effects on Central Pump Station in Section E.4 Cultural Resources, below, which determined that effects

would be less than significant) and the project would comply with the Urban Forestry Ordinance, such that street trees that may need to be removed during construction would be replaced as required. Therefore, impacts on scenic resources during construction would be less than significant. No mitigation would be required.

## Operation

The proposed pipelines within Sloat Boulevard and 19th Avenue (eligible state scenic highways) would be underground with limited aboveground appurtenances such as cabinets, air valves, hydrants and sampling stations. However, these appurtenances would not adversely affect scenic resources visible from these roadways, including trees or historic buildings, due to their small size (see dimensions in [Table 1](#)). The new emergency pump station 1 at the Central Pump Station/Merced Manor Reservoir site would be screened from Sloat Boulevard by the existing pump station and would be designed to be visually consistent with that structure (see Section E.4, Cultural Resources) in accordance with **Mitigation Measure CR-1b: Emergency Pump Station 1 Design for Compatibility with Central Pump Station per Secretary of the Interior's Standards**. No landmark trees would be removed. The new emergency pump station 2 would be constructed at a site that is not visible from Sloat Boulevard, 19th Avenue, or the San Francisco 49-Mile Drive and thus would not affect scenic resources. As a result, the project would not adversely affect scenic resources along these scenic streets. Therefore, impacts on scenic resources during project operation would be less than significant. No mitigation would be required.

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Impact AE-3: The proposed project would not conflict with applicable zoning and other regulations governing scenic quality. (*Less than Significant*)

Construction and operation of the project would be completed in accordance with all applicable zoning and other regulations as described below.

## Construction

The project includes pipelines and appurtenances constructed in the city right-of-way as well as emergency pump stations at sites owned by the SFPUC and zoned as Public Use District and Open Space Height and Bulk District. The new emergency pump stations are consistent with this zoning and do not exceed the height and bulk guidelines and would thus not conflict with San Francisco zoning regulations. The project would also be required to comply with the Urban Forestry Ordinance, which would ensure protection of trees at project sites and replacement of any street trees that would need to be removed.

While most of the pipeline alignment would extend within the public right-of-way and would not affect trees, a limited number of trees could be required to be removed where trees conflict with the pipeline alignment or other project components. Specifically, up to five trees would be required to be removed at Lake Merced Pump Station, along Lake Merced Boulevard and up to five trees may be removed for the new pump station 2 at the Sunset Reservoir facility. In addition, possible tree removal may be required along the pipeline alignment as it extends through Golden Gate Park, requiring removal of a limited but undetermined number of trees.

It would not be possible to replace the trees in their original locations as trees are not permitted to be planted above the pipeline alignment in accordance with SFPUC's Right-of-Way Integrated Vegetation

Management Policy.<sup>33</sup> Nevertheless, street trees would be replaced in accordance with the City's Urban Forestry Ordinance, and the specific locations of replacement trees would be determined during the design stage (see Section E.15, Biological Resources, for further discussion of this ordinance and tree removal). As discussed in Impact AE-2, no landmark trees in the project area would be removed. Therefore, construction of the project would not conflict with applicable zoning and other regulations governing scenic quality, and the impact would be less than significant. No mitigation would be required.

## Operation

The project would include the addition of buildings and structures that would be subject to the San Francisco Arts Commission Civic Design Review process and Public Arts Program and the project would not conflict with applicable zoning and other regulations governing scenic quality.

Aboveground appurtenances such as cabinets and fire hydrants, as well as the new emergency pump station buildings would be visible structures added to the landscape. The appurtenances are small structures typical of similar structures that are present on sidewalks throughout the city. The emergency pump stations would be constructed at existing pump station sites and would thus be consistent with the existing structures and use of those sites. These structures thus would not conflict with existing and surrounding zoning or regulations governing scenic quality. Therefore, the impact would be less than significant. No mitigation would be required.

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**Impact AE-4: The proposed project would not create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area. (*Less than Significant*)**

## Construction

Construction would typically occur between 7 a.m. and 5 p.m. Monday through Friday. Nighttime construction work could also be required for boring activities associated with the trenchless crossings under Muni rail lines and to expedite the construction schedule (in compliance with Section 2908 of the Noise Ordinance). The presence of nighttime construction lights would create a new, temporary light source that could be visible from surrounding roadways and residences. However, potential light and glare impacts would be minimized with implementation of SFPUC Standard Construction Measure 8 (Visual and Aesthetic Considerations), which requires that nighttime lighting be directed away from residential areas and have shields to prevent light spillover effects. With implementation of this measure, temporary construction impacts would be less than significant. No mitigation would be required.

## Operation

The new pump stations would have exterior lighting installed on the buildings, similar to the existing pump station lighting at the existing Central Pump Station building. New lighting would not be needed at the Lake Merced Pump Station. All added lighting would be kept to a minimum level as deemed necessary for general safety. Reflective surfaces would not be used on emergency pump stations. Compliance with the requirements of California Green Building Code section 5.106.8, which specifies performance standards (including maximum amount of light that can be emitted upward and maximum glare ratings) to reduce light pollution would ensure that changes in lighting would not result in substantial new sources of light or glare

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33 SFPUC, Amendment to the Right of Way Integrated Vegetation Management Policy. January 13, 2015.



that affect nighttime views in the area or significantly impact other people or properties. No mitigation would be required.

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**Impact C-AE-1: The proposed project, in combination with the cumulative projects, would not have a substantial adverse effect on scenic vistas, substantially damage scenic resources, or conflict with applicable zoning and other regulations regarding scenic quality, or generate substantial new sources of light or glare. (*Less than Significant*)**

### **Scenic Vistas and Scenic Resources**

The geographic scope for potential cumulative aesthetic impacts to scenic vistas and scenic resources includes cumulative projects within the publicly accessible viewshed of the project, which could extend up to 1,000 feet around the project sites. The visual setting of the project sites is defined by topography and the density of development in the area. Due to the density of development in the vicinity and because the project would be generally located in level terrain that does not afford long distance views, most views of the project sites would be relatively short range.

### **Construction**

All of the identified cumulative projects would involve construction equipment and activity that could temporarily affect publicly accessible views in the project area, some of which may be scenic or may provide views of scenic resources. However, given the existing urban setting, construction activities are common in the area and those associated with the cumulative projects would be temporary. As a result, construction of the project, in combination with the cumulative projects, would not result in a significant cumulative impact on scenic vistas and scenic resources.

### **Operation**

Only the Lake Merced West Project and Parkmerced Project would include permanent facilities that would affect views along the San Francisco 49-Mile Drive, but both would be consistent with the existing visual character of the area. None of the identified cumulative projects would permanently affect scenic resources in Golden Gate Park, but the Lake Merced West Project would be adjacent to Lake Merced. The identified cumulative projects are located within areas developed for commercial and residential uses and would be generally consistent with the existing visual character of the sites and surroundings. No long-term impacts on scenic vistas or scenic resources would thus result from the cumulative projects. Operation of the project would thus not combine with the cumulative projects to result in a substantial adverse effect on a scenic vista and would not conflict with regulations governing scenic quality. Therefore, permanent significant cumulative impacts on scenic vistas and resources would not result. No mitigation would be required.

### **Light and Glare**

The geographic scope for potential cumulative construction period light and glare impacts includes cumulative projects within 1,000 feet of areas where nighttime construction could occur for the project, which might occur at the pipeline crossings of the L Taraval and N Judah light rail lines and to expedite the construction schedule (in compliance with Section 2908 of the Noise Ordinance). The geographic scope for cumulative operational impacts includes projects within 1,000 feet of the new emergency pump stations, which are the only aboveground facilities that would entail operational lighting.

### Construction

The cumulative projects would have less-than-significant impacts related to construction glare because nighttime construction is not expected to be needed for most of the cumulative projects. Some nighttime construction may be needed for the Ocean Beach Climate Adaptation Project where work along the Great Highway south of Sloat Boulevard could require nighttime lighting. This work would be over a half mile from the nearest location where nighttime construction might occur for the project, which is at the crossing of the L Taraval light rail line. Additionally, none of the other cumulative projects are located near the L Taraval or N Judah light rail lines where nighttime construction might be needed for the project. Project construction lighting thus would not combine with cumulative projects construction to result in significant cumulative impacts on nighttime views in the area.

### Operation

Most of the cumulative projects would have no impacts related to operational lighting and glare as facilities would either not require lighting (e.g. Caltrans Pavement Rehabilitation and Vista Grande Drainage Basin) or would replace existing facilities that already use lighting (St. Ignatius, Parkmerced and Stonestown Projects), and therefore would not result in significant cumulative impacts related to glare. No mitigation would be required. If additional lighting is needed for other SFPUC projects at the Central Pump Station/Merced Manor Reservoir facility or Sunset Reservoir facility they could potentially combine with the new emergency pump stations to create cumulative light and glare impacts, but all of the SFPUC projects would be required to comply with California Green Building Code section 5.106.8, which specifies performance standards for lighting to avoid impacts. Cumulative impacts would therefore not be significant.

## E.3 Population and Housing

| Topics:                                                                                                                                                                                                             | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                           | Not Applicable           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| <b>POPULATION AND HOUSING.</b> Would the project                                                                                                                                                                    |                                |                                                    |                                     |                                     |                          |
| a) Induce substantial unplanned 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)? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| b) Displace substantial numbers of existing people or housing units, necessitating the construction of replacement housing?                                                                                         | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Impact PH-1: The proposed project would not induce substantial unplanned population growth, either directly or indirectly. (*Less than Significant*)

In general, a project would be considered growth-inducing if its implementation were to result in substantial unplanned population increases and/or new development that might not occur if the project were not

implemented. The project includes construction and operation of a water transmission pipeline within an existing public right-of-way to provide resilient fire protection and redundancy for potable water system in western San Francisco.

## Construction

Project construction is expected to take approximately 15 years. The number of construction workers onsite daily would vary depending on the specific construction activities being performed, but the construction force necessary for project completion would range from approximately 15 workers up to approximately 90 workers per day, spread out across the project area. The total construction workforce in San Francisco and San Mateo counties is projected to be 48,300 by 2030.<sup>34</sup> Given the relatively small size of the work force and the large size of this regional construction workforce, the labor needs of the project are expected to be met by local and regional construction workers. Construction workers who do not live in the vicinity of the project in the western side of San Francisco would most likely commute from elsewhere in the San Francisco Bay Area, rather than relocate from more distant cities or towns. Consequently, project construction would not induce substantial unplanned population growth by attracting a large number of construction workers from outside the region. Project construction, therefore, would not create an unplanned demand for housing or other facilities or services. As a result, the project's impact during construction relative to population and housing would be less than significant. No mitigation would be required.

## Operation

The project does not include the development of housing or extension of roads or utilities into areas currently unserved by SFPUC, and it would not expand the area's potable water capacity or service area. The SFPUC currently employs hundreds of operations and maintenance staff for the water distribution system within San Francisco. Operation and maintenance of the proposed facilities would be conducted by existing workers and therefore would not induce substantial unplanned population growth in the area and would not require the construction of new housing. Therefore, operation of the project would have no impact on population and housing. No mitigation would be required.

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### **Impact PH-2: The proposed project would not displace substantial numbers of existing people or housing units, necessitating the construction of replacement housing outside. (*No Impact*)**

There are no existing housing units within the area where project construction would occur. Therefore, the project would not displace any existing people or housing units or necessitate construction of any replacement housing elsewhere. No impact would occur. No mitigation would be required.

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### **Impact C-PH-1: The proposed project, in combination with cumulative projects, would not result in a significant cumulative impact related to population and housing. (*Less than Significant*)**

The geographic scope of cumulative impacts on population and housing includes the Outer Richmond, Outer Sunset, and Parkside neighborhoods, and part of the Lakeshore neighborhood. The identified cumulative projects that include housing are the Stonestown Development Project and the Parkmerced Project. These

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<sup>34</sup> California Employment Development Department, Employment Projections: 2020-2030 Local Long-Term Employment Projections Highlights, San Francisco and San Mateo Counties, <https://labormarketinfo.edd.ca.gov/data/employment-projections.html#Long>, accessed November 18, 2024.

projects would add over 9,000 housing units and would increase the residential population within the area. However, as discussed in Impact PH-2, the project would not displace any existing people or housing or result in the need for replacement housing. In addition, the project would not develop new housing that could directly induce population growth. Thus, the project would not contribute to any potentially significant cumulative impact associated with displacement of people or housing or direct population growth (no impact).

## Construction

The cumulative projects identified in Section B, Project Setting, are located within the Outer Richmond, Outer Sunset, and Parkside neighborhoods. Construction employment generated by the identified cumulative projects could overlap, depending on the timing and duration of cumulative project construction. The California Employment Development Department has estimated that San Francisco and San Mateo counties' combined construction workforce will grow to approximately 48,300 construction workers by 2030.<sup>35</sup> Given the size of the regional construction workforce, the construction labor force in San Francisco and surrounding counties is expected to accommodate ongoing demand for construction workers, including those related to the identified cumulative projects. Therefore, construction of the project, in combination with the cumulative projects, would not result in a significant cumulative impact on unplanned population growth or demand for additional housing. No mitigation would be required.

## Operation

As discussed above, the project would not require the addition of new workers. The project would not require the residential relocation of any employees, nor would the project involve the development of new housing that could induce unplanned population growth in the region. Therefore, project operation would not contribute to any potential cumulative impact on population growth (no impact).

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35 California Employment Development Department, (n.d.), 2020-2023 Local Employment Projects Highlights, available at <https://labormarketinfo.edd.ca.gov/data/employment-projections.html#Long> Accessed on March 26, 2024.

## E.4 Cultural Resources

| Topics:                                                                                                                                                                                                   | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                | Not Applicable           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|--------------------------|--------------------------|
| <b>CULTURAL RESOURCES.</b> Would the project                                                                                                                                                              |                                |                                                    |                              |                          |                          |
| a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5, including those resources listed in article 10 or article 11 of the San Francisco Planning Code? | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Cause a substantial adverse change in the significance of an archeological resource pursuant to §15064.5?                                                                                              | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Disturb any human remains, including those interred outside of formal cemeteries?                                                                                                                      | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |

### Impact CR-1: The proposed project would not cause a substantial adverse change in the significance of a historical resource. (*Less than Significant with Mitigation*)

Historical resources are properties that meet the terms of the definitions in Public Resources section 21084.1 and CEQA Guidelines section 15064.5. Historical resources include properties listed in, or formally determined eligible for listing in, the California Register of Historic Resources (California Register) or listed in an adopted local historic register. The terms “local historic register” or “local register of historical resources” refer to a list of resources that are officially designated or recognized as historically significant by a local government pursuant to resolution or ordinance. Historical resources also include resources identified as significant in a historical resource survey, meeting certain criteria as identified in CEQA Guidelines section 15064.5. In addition, a property that is not listed but is otherwise determined to be historically significant based on substantial evidence would also be considered a historical resource. Specifically, a property may be considered a historical resource if it meets any of the California Register criteria related to events, persons, architecture, or information potential that make it eligible for listing in the California Register, or if it is considered a contributor to an existing or potential historic district. The significance of a historical resource is materially impaired when a project “demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance.” Archeological resources, including resources that are potentially historical resources according to CEQA Guidelines section 15064.5, are addressed under Impact CR-2.

The project study area for architectural resources includes areas where improvements would take place at existing SFPUC facilities as well as locations on and immediately adjacent to the pipeline within the public right-of-way where aboveground structures and appurtenances, including cabinets, air valves, sampling stations, and hydrants would be installed.



## Inventory and Evaluation of Architectural Resources

Two historic resource evaluation reports were prepared to evaluate historic age buildings and structures within the project area that may be affected by the project.<sup>36</sup> The reports evaluated the Sunset Reservoir, Merced Manor Reservoir, and Central Pump Station. Planning department staff also considered the scope of work related to the Lake Merced Pump Station and determined that it would not trigger an evaluation because the work would either occur within the interior of buildings, which are not publicly accessible, or be below ground. Planning department staff reviewed the proposed alignments of the project pipelines and variants to determine if any of the permanent aboveground components (such as electrical cabinets, fire hydrants and sampling stations) may potentially impact historic resources along the alignment. Planning department staff determined that because these relatively small components would be located entirely within the public right-of-way, it was not necessary to identify adjacent individual historic buildings because they would not be affected by the project. Only historic districts that were immediately adjacent to or within the alignment were identified. Planning department staff reviewed and concurred with the findings of the two historic evaluation reports as well as identified the historic districts directly within or adjacent to the pipeline in a memorandum dated May 14, 2025.<sup>37</sup>

The memorandum agrees with the finding that of the existing, aboveground facilities that are part of the project, the only site eligible as a historic resource is the Central Pump Station. Both the Sunset Reservoir and Merced Manor Reservoir were determined to not be historic resources. The Central Pump Station is individually eligible for listing in the California Register under Criterion 3 as a skillful execution by architect of merit Willis Polk of the Beaux Arts style applied to a building related to water infrastructure. The Central Pump Station's period of significance is 1912, its date of construction. The Central Pump Station retains sufficient integrity to communicate its historical significance. Therefore, the Central Pump Station is a historical resource for the purposes of CEQA.

In addition, the project alignment would extend within or adjacent to a number of other California Register-eligible historic districts including the Golden Gate Park historic district, the Auxiliary Water Supply System (also referred to as the San Francisco Fire Department High Pressure System) historic district, and eight other institutional and residential historic districts (see [Figure 13](#)). Therefore, potential impacts from the construction and operation of the new emergency pump station 1 adjacent to the existing Central Pump Station, and aboveground installation of infrastructure within or adjacent to other historic districts are evaluated below.

## Construction

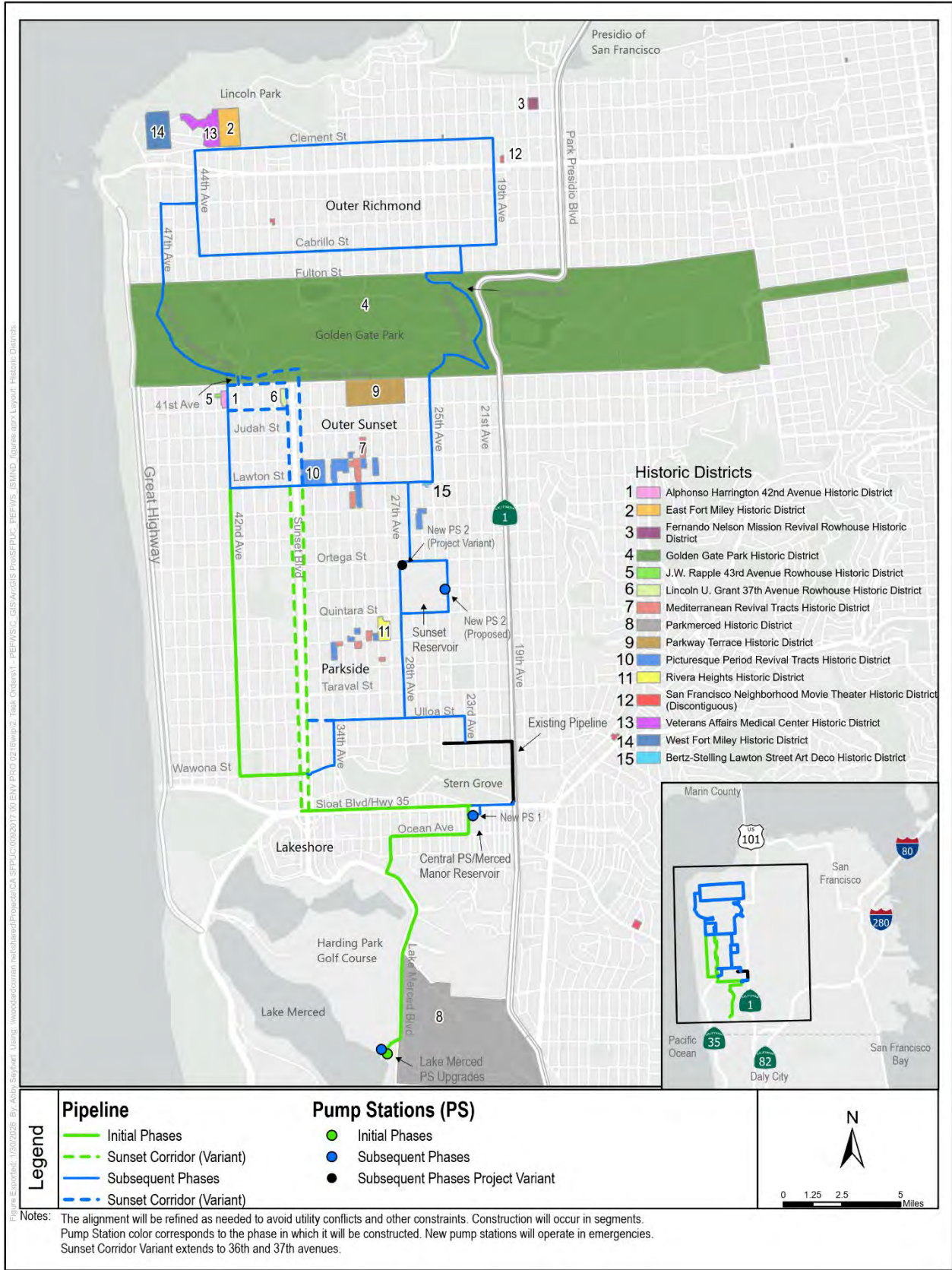
The SFPUC Standard Construction Measure 9 (Cultural Resources) includes the following with regard to Historic (Built Environment) Resources: “Where construction will take place in proximity to a building or structure identified as a significant historical resource but would not otherwise directly affect it, the SFPUC will implement protective measures, such as but not limited to, the erection of temporary construction barriers to ensure that inadvertent impacts to such building or structures are avoided.”

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36 Merced Manor Reservoir and the Central Pump Station were evaluated in, ICF, Final Merced Manor, San Francisco Historic Resource Evaluation, Part I, 2021, and the Sunset Reservoir was evaluated in, JRP, Historic Resource Evaluation, Part I, Westside Potable Emergency Firefighting Water System Project: Merced Manor Reservoir and Sunset Reservoir, San Francisco, California, 2025.

37 Memorandum to File re the Westside Potable Emergency Firefighting Water System Project, prepared by the San Francisco Planning Department, May 14, 2025.

Figure 13: Historic Districts (revised)



#### *New Emergency Pump Station 1*

Project construction activities would occur south of the existing Central Pump Station, which has been identified as a historical resource. Construction would not directly affect the existing historic Central Pump Station and the SFPUC would implement protective measures to avoid inadvertent impacts to the historic resource, therefore, impacts would be less than significant.

#### *Pipeline and Aboveground Appurtenances*

New pipelines and other belowground project components would be constructed within existing roads and aboveground project components including cabinets, air valves, hydrants and sampling stations would be constructed adjacent to individual historic resources and adjacent to or within several historic districts. Construction activities for installation of pipelines and appurtenances would be confined to the existing public right-of-way and thus would not directly affect historic districts or any individually eligible historic resources along the alignment. Further, the SFPUC would implement protective measures in accordance with its Standard Construction Measure 9 to minimize potential impacts.

The project construction includes the installation of aboveground cabinets along the pipelines within the public right-of-way, and thus, the cabinets may be either immediately adjacent to or within an identified historic district. Although these types of aboveground infrastructure are common features within the urban environment, their installation may require the removal of distinctive roadway or sidewalk elements. Within identified historic districts the planning department treats distinctive surface roadway and sidewalk elements materials that appear to be 45 years or older as potential character-defining features that contribute to the setting of their respective historic districts. Such features include brick surfacing, brick gutters, gutters lined with former cemetery furniture (broken head and foot stones), granite curbs, cobblestones, railway and streetcar rails, sidewalk lights, and utility plates. Street furniture located within sidewalks of historic districts that appear to be 45 years or older is also considered to contribute to the

setting of the district. This includes light standards, police and fire call boxes, and fire hydrants. Damage to these historic features during construction would be a significant impact.

**Mitigation Measure M-CR-1a: Protection of Sidewalk and Roadway Elements in Historic Districts** shall be implemented to ensure protection, restoration or replacement of historic materials on sidewalks and roadways in historic districts.

#### **Mitigation Measure M-CR-1a: Protection of Sidewalk and Roadway Elements in Historic Districts.**

Within historic districts established by ordinance (Article 10 landmarks and Article 11 conservation districts), and/or determined eligible for or on the California Register of Historic Resources and/or the National Register of Historic Places, distinctive sidewalk and roadway elements, namely brick surfacing, brick gutters, gutters lined with former cemetery furniture (broken head and foot stones), granite curbs, cobblestones, railway and streetcar rails, sidewalk lights, and utility plates that appear to be 45 years or older shall be treated as potentially character-defining features of the setting of their respective historic districts. For those locations, historic materials shall be protected in place (preferred method), salvaged and re-installed, or replaced in-kind to match the existing color, texture, material, and character of the feature.

Planning department preservation staff determined that the impacts to identified historic districts within or immediately adjacent to the project site would be less than significant with implementation of mitigation.

Indirect construction vibration effects on historical resources are evaluated in Section E.7, Noise. As discussed therein, potential impacts on historical resources resulting from vibrations due to construction equipment would be less than significant with mitigation.

## Operation

The following discussion evaluates the potential for impacts on historic resources from the new, aboveground project facilities.

### *New Emergency Pump Station 1*

The project would include a new emergency pump station 1 on an area south of the Central Pump Station currently occupied by an existing parking area, lawn, and two surge tanks. The new building would be similar to the existing building in terms of size and massing. The existing surge tanks and underground fuel storage tanks would be replaced with new larger tanks to accommodate the new emergency pump station, placed aboveground, and located east of the proposed building.

In addition, the project would also require installation of several aboveground cabinets on the Central Pump Station/Merced Manor Reservoir site to house electrical and control equipment, as well as battery backups, built on concrete pads. Aboveground facilities that are proposed near the Central Pump Station include valve, controller, and PG&E cabinets, up to approximately 6 feet tall, in two locations. Nearest the Central Pump Station, cabinets would be installed in an up to 3-foot-wide by 40-foot-long area, paralleling 23rd Avenue, about 40 feet from the Central Pump Station's southwest corner (see [Figure 6](#)). The other location would be approximately 250 feet northeast of the Central Pump Station, near the corner of Sloat Boulevard and 22nd Avenue in an approximately 7-foot-wide by 18-foot-long area.

Although the project does not propose demolition of the Central Pump Station it does include the construction of a new pump station next to the existing pump station which may potentially impact the historic building's setting. The new emergency pump station at the rear of the historic building would not impact the Central Pump Station's siting along Sloat Boulevard or its prominent curved pathways at the front of the building. The new building would also not physically affect the historic building, and thus none of the Central Pump Station's design features or historic materials would be affected. However, the addition and operation of new structures adjacent to the Central Pump Station has potential to cause a substantial adverse change to the historical resource if the new pump station were not compatible with the historic character of the Central Pump Station such that it would affect the setting of the historic building. This would be a potentially significant impact. Implementation of **Mitigation Measure M-CR-1b: Emergency Pump Station Design for Compatibility with Central Pump Station per Secretary of the Interiors Standards**, would reduce the impact to a less-than-significant level by ensuring that the design of the new building is in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

### **Mitigation Measure M-CR-1b: Emergency Pump Station 1 Design for Compatibility with Historic Central Pump Station per Secretary of the Interior's Standards.**

The new emergency pump station 1 at the existing Central Pump Station/Merced Manor Reservoir facility shall be designed and constructed in a manner that is in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. Specifically, the new emergency pump station shall be designed to meet Standard #9, which requires that "New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the



massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.”

In keeping with this standard, the new emergency pump station shall be designed to be compatible with but differentiated from the historic pump station. Design elements shall include rectangular massing and a similar exterior color to the Central Pump Station and its additions. Similar materials and finishes shall be used. The emergency pump station shall be designed so as to not overpower the existing historic building and shall avoid use of industrial or highly reflective exterior materials. The new emergency pump station shall be sited at a sufficient distance from the Central Pump Station and in an appropriate location on the site to allow the historic building’s architecture and character to be evident. Cabinets located along 23rd Avenue shall be designed to minimize their visual intrusion upon the Central Pump Station from the street and sidewalk. The SFPUC shall submit the proposed design of emergency pump station 1 to planning department preservation staff, who shall review and approve to ensure it is in conformance with the Secretary of the Interior’s Standards for the Treatment of Historic Properties.

Because **Mitigation Measure M-CR-1b: Emergency Pump Station 1 Design for Compatibility with Historic Central Pump Station per Secretary of the Interior’s Standards** would ensure that the proposed aboveground components at the Central Pump Station would visually integrate with existing facilities, they would not result in an adverse change to the physical characteristics of the pump station or its immediate surroundings such that it would prevent the pump station from conveying its historical significance. The impact to the Central Pump Station, an individual historic resource, would be less than significant with mitigation.

#### *Aboveground Appurtenances for the Pipeline*

Because the project includes the installation and operation of a belowground pipeline that would pass through or immediately adjacent to a number of historic districts, the ancillary aboveground elements of the project that include the installation of cabinets, air valves, sampling stations and fire hydrants were evaluated to determine if it would impact these historic resources. Because the project does not include the installation of any aboveground cabinets within Golden Gate Park and other structures are much smaller and comparable to existing structures within the park, there would be minimal visible alterations within Golden Gate Park and therefore there will be no impact to the Golden Gate Park historic district. Although the Auxiliary Water Supply System historic district extends to the Sunset neighborhood, because there are no contributing features of Auxiliary Water Supply System adjacent to the project site there would be no impact to this historic district.

In summary, the potential impacts to the Central Pump Station, which has been identified as an individual historic resource, would be reduced to a less-than-significant level with the implementation of **Mitigation Measure M-CR-1b Emergency Pump Station 1 Design for Compatibility with Historic Central Pump Station per Secretary of the Interior’s Standards**. Other potential impacts to historic resources identified along the pipeline alignment would be less than significant with implementation of SFPUC’s Standard Construction Measure 9 (Cultural Resources) for Historic (Built Environment) Resources and **Mitigation Measure M-CR-1a: Protection of Sidewalk and Roadway Elements in Historic Districts**. Therefore, the overall impact to historical resources is less than significant with mitigation.

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**Impact CR-2: The proposed project would not cause a substantial adverse change in the significance of an archeological resource. (*Less than Significant with Mitigation*)**

This section discusses archeological resources, both as historical resources according to CEQA Guidelines section 15064.5, as well as unique archeological resources as defined in section 21083.2(g).<sup>38</sup> The potential for encountering archeological resources is determined by relevant factors, such as archeological sensitivity criteria and models, local geology, historical context, and any documented information on known archeological resources in the area. This determination also factors in the project's ground disturbance including the location, depth, and amount of excavation proposed.

Construction of the project would include ground disturbance up to approximately 16 feet deep for open trench construction and up to approximately 30 feet deep for trenchless construction for the pipeline work. The construction sites for the new pump stations would be excavated approximately 10 feet below grade. Soil improvement work located at the Lake Merced Pump Station and along Lake Merced Boulevard could extend up to 50 feet deep at some locations. Table 5 in the project description shows depths of excavation for all facilities.

Planning department staff conducted a cultural resource review to determine the potential for archeological resources listed in or eligible for listing in the California Register and National Register or unique archeological resources within the project area and assessed the project impact on those resources, should any exist.<sup>39</sup> Staff determined that the project area has sensitivity for both Native American and historic era archeological resources and that the proposed ground disturbing activities, including trenching and soil improvements, have the potential to impact significant archeological resources, if present, at the project sites.

The project area has high sensitivity for Native American archeological resources in two general areas - in and around Golden Gate Park as well as in the vicinity of Lake Merced and Laguna Puerca<sup>40</sup>. This determination was based on the location of recorded Native American sites as well as modeling of the potential for Native American archeological resources that factors proximity to historical water sources, geology, and slope. There are three recorded Native American archeological resources within 0.25 miles of the project that are located near the shores of Lake Merced and Laguna Puerca, one of which, a redeposited midden, is within 50 feet of the project.

The project area has sensitivity for historic era archeological resources. This determination was based on the location of recorded historic era sites as well as historical maps, photographs, and archival information. There is one recorded historical archeological site within the project area, City Cemetery, and two additional known sites within 0.25 miles of the project. In 1868, the Board of Supervisors designated approximately 200 acres near Lands End as a municipal cemetery. The cemetery extended west from 33rd Avenue to 48th Avenue. From the southeasterly corner of 33rd Avenue and Clement Street the cemetery extended 1,960 feet north toward the top of a bluff overlooking the ocean. The grounds were operated as a municipal cemetery

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38 A unique archeological resource is one for which "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 example of its type; or 3) is directly associated with a scientifically recognized important prehistoric or historic event or person." (CEQA section 21083.2 [g]).

39 San Francisco Planning Department, *Cultural Resource Review Memo for the Westside Potable Emergency Firefighting Water System Project*, December 2024, updated July 2025. Kari Hervey-Lentz. San Francisco, California.

40 Laguna Puerca or Pig Lake, is the former name of Pine Lake located within Pine Lake Park, immediately west of Stern Grove.

between 1870 and 1876. For the first six years of its operation, the cemetery accepted bodies that were either relocated from Yerba Buena Cemetery, now in the area of Civic Center, as well as indigent individuals who died without the means to pay for burial elsewhere. In the late 1870s, the Board of Supervisors began to grant blocks within the cemetery to benevolent, social, and religious societies for the interment of their members. These plots were granted to at least 24 different associations.<sup>41</sup>

In the 1880s and 1890s, city leaders, neighborhood booster groups, and residents began advocating for the closure and removal of burial grounds in the city and county. The southwest portion of the City Cemetery land was annexed by the Federal Government in 1893 to construct coastal fortifications that became Fort Miley. The City banned new burials at City Cemetery in 1898 and two years later interment within the city was outlawed. After 1900, large private cemeteries created in San Mateo County became the final resting place for the majority of San Francisco's dead. San Francisco's Board of Supervisors reclassified the land of City Cemetery as a park in 1909. Although a contemporary ordinance directed interested parties to disinter and relocate their dead, comparatively few bodies were moved from City Cemetery. It is estimated that between 10,000 and 19,700 burials remain in the park. Extant records indicate that more than 29,000 people were buried in City Cemetery between 1870 and 1898. Of these, more than 6,300 Chinese individuals were disinterred in accordance with their death rites of the time, which included the transportation of their bones to China. The extent to which other societies and organizations removed their dead is, at the present time, unclear. The City made no attempt to remove the remains of indigents.<sup>42</sup>

Human remains and funerary items are periodically unearthed or discovered within the former cemetery land. In 1921, an estimated 1,500 coffins and human remains were uncovered during construction of the California Palace of the Legion of Honor Museum. Human remains have been found by groundskeepers, utility workers, and members of the public within Lincoln Park throughout the 20th century. In the 1990s, remains of almost 750 individuals from an indigent section of City Cemetery were documented by archeologists during construction at the Legion of Honor Museum. In the 21st century, human remains that were once buried in the Italian Mutual Benevolent Society and the French Mutual Benevolent Society sections have been uncovered as a result of construction around Lincoln Park.<sup>43</sup>

Although the project overlaps the designated boundaries of City Cemetery on Clement Street between 33rd Avenue and 44th Avenue, historical records indicate that only the segment between 33rd Avenue and 38th Avenue was used for burial. Records indicate that this area was used for burial by four groups, including Chuck Sen Tong, Eastern/Greek Orthodox, Knights of Pythias, and Slavonic Illyric during the 1880s-1890s. Municipal records indicate that at least 230 people were buried in the later three sections. In addition, this area overlaps with the main entrance to the cemetery as well as the cemetery superintendent's house.

In addition to City Cemetery, the project area has sensitivity for historic era archeological resources where historical maps show development within the right-of-way prior to laying out of the modern street grid. This includes development such as the Giant Powder Works that operated between 1870 and 1879 and employed Chinese laborers. Research indicates that the powder works was bounded by Kirkham Street, 20th Avenue, Moraga Street, and 23rd Avenue.

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41 San Francisco Planning Department, Article 10 Landmark Designation Fact Sheet for City Cemetery, May 4, 2022. Available at: <https://sfgov.legistar.com/View.ashx?M=F&ID=10923785&GUID=8F2F7E79-3CBA-4BD6-8AAE-0B35D6BAB74A>

42 Ibid

43 Ibid

## Construction

Although some archeological resources may have been damaged by the installation of existing utilities, given the information above, the project's ground disturbing activities could result in significant impacts on potential significant archeological resources. To reduce impacts on archeological resources, the SFPUC would be required to implement **Mitigation Measure M-CR-2a: Accidental Discovery**, **Mitigation Measure M-CR-2b: Archeological Monitoring**, and **Mitigation Measure M-CR-2c: Archeological Testing**, would reduce the impact to a less-than-significant level.

**Mitigation Measure M-CR-2a: Accidental Discovery** is applicable to the entirety of the project. **Mitigation Measures M-CR-2b: Archeological Monitoring** is applicable to areas with high sensitivity for Native American and/or historic era resources as follows:

- Lake Merced Pump Station east to Lake Merced Boulevard, Lake Merced Boulevard between Lake Merced Pump Station and Middlefield Drive, Middlefield Drive between Lake Merced Boulevard and Ocean Avenue, Ocean Avenue between Middlefield Drive to Inverness Drive
- Sloat Boulevard between Inverness Drive and 37th Avenue, 37th Avenue between Sloat Boulevard and Vicente Street, and 36th between Sloat Boulevard and Vicente Street
- 34th Ave between Vicente Street and Wawona Street, Wawona Street between 34th Avenue and 42nd Avenue, 42nd between Wawona and Vicente Street
- Ulloa St between 36th Avenue and 35th Avenue and between 32nd Avenue and 33rd Avenue
- 25th Ave between Judah and Martin Luther King Jr. Dr, Martin Luther King Dr between 25th Ave and Transverse Dr, Transverse Dr between Martin Luther King Dr and John F. Kennedy Dr
- ~~Lawton between 23rd Avenue and 21st and 21st Avenue between Lawton and Kirkham Street~~
- 43rd Ave between Judah Street and Lincoln Way, Irving St between 42nd Avenue and 37th Avenue, 37th Avenue between Irving St and Lincoln Way, Lincoln Way between 37th Avenue and 42nd Avenue, 36th between Irving Street and Lincoln Way, Martin Luther King Drive to 47th Avenue to Balboa Street
- Cabrillo Street between 43rd Avenue and 44th Avenue and between 41st Avenue and 36th Avenue
- Clement Street between 44th Avenue and 38th Avenue

**Mitigation Measures M-CR-2c: Archeological Testing** is applicable to areas identified as within or in close proximity to known Native American and/or historic era archeological sites at the following locations.

- Lake Merced Boulevard between Middlefield Drive and Winston Drive.
- Clement Street between 38th Avenue and 32nd Avenue.

If significant archeological resources are discovered, impacts would be mitigated through **Mitigation Measures M-CR-2a: Accidental Discovery**, **Mitigation Measure M-CR-2b: Archeological Monitoring**, and **Mitigation Measure M-CR-2c: Archeological Testing**. Implementation of the approved plans for testing, monitoring, and data recovery would preserve and realize the information potential of archeological resources. The recovery, documentation, and interpretation of information about archeological resources that may be encountered within the project site would enhance knowledge of the layers of history of San Francisco. This information would be available to future archeological studies, contributing to the collective body of scientific and historic knowledge.

With the implementation of **Mitigation Measures M-CR-2a: Accidental Discovery**, **Mitigation Measure M-CR-2b: Archeological Monitoring**, and **Mitigation Measure M-CR-2c: Archeological Testing**, the project would not cause a substantial adverse change to the significance of an archeological resource, if present within the project site. Therefore, this impact would be less than significant with mitigation.

### **Mitigation Measure M-CR-2a: Accidental Discovery**

Archeological discovery is applicable to the entire project where ground disturbing activities would occur.

Archeological Awareness. The SFPUC, in consultation with the Environmental Review Officer (ERO), shall retain the services of an archeological consultant approved by the SF Planning Cultural Resources Team to provide archeological awareness training to all work crews who will be involved in ground disturbing activities at the project site. The training shall inform all project contractors, subcontractors and work crew members to be on the alert for evidence of the presence of archeological resource(s), of how to identify the evidence of such a resource(s), and of stop work, resource protection, and notification requirements in the event of suspected discovery of an archeological resource by construction crew members.

The SFPUC shall distribute the planning department archeological resource “ALERT” sheet to the project prime contractor; to any project subcontractor (including demolition, excavation, grading, foundation, pile driving, etc. firms); or utilities firm involved in soils-disturbing activities within the project site. Prior to any soils-disturbing activities being undertaken, each contractor is responsible for ensuring that the “ALERT” sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, supervisory personnel, etc. The SFPUC shall provide the ERO with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) confirming that all field personnel have received copies of the Alert Sheet.

Cultural Sensitivity Training. A representative from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the project at their discretion shall provide a Native American cultural sensitivity training to all work crews who will be involved in ground disturbing activities at the project site.

Stop Work and Notification Upon Discovery. Should any indication of an archeological resource be encountered during any soils-disturbing activity of the project, the project Head Foreman and/or SFPUC shall immediately notify the ERO and shall immediately suspend any soils-disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures should be undertaken. The ERO may also require that the SFPUC immediately implement a site security program if the archeological resource is at risk from vandalism, looting, or other damaging actions.

Discovery Identification, Evaluation, and Treatment Determination. If the ERO determines that an archeological resource may be present within the project site, the SFPUC shall retain the services of an archeological consultant approved by the planning department to identify, document, and evaluate the archeological resource. The archeological consultant shall be empowered to temporarily redirect construction crews and heavy equipment until the deposit is evaluated. The archeological consultant shall, after making a reasonable effort to assess the integrity and

significance of the encountered archeological deposit, present the findings of this assessment to the ERO.

If the ERO determines that a significant archeological resource or tribal cultural resource is present and that the resource could be adversely affected by the project, the ERO, in consultation with the SFPUC, shall determine whether preservation of the resource in place is feasible. If so, the project shall be re-designed so as to avoid any adverse effect on the significant archeological resource and the archeological consultant shall prepare an archeological resource preservation plan, which shall be implemented by the SFPUC during construction. The consultant shall submit a draft preservation plan to the planning department for review and approval. If preservation in place is not feasible, a data recovery program shall be implemented, unless the ERO determines that the archeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.

Consultation with Descendant Communities. On discovery of an archeological site associated with descendant Native Americans, the Overseas Chinese, or other potentially interested descendant group an appropriate representative of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archeological field investigations of the site and to offer recommendations to the ERO regarding appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. The ERO and SFPUC shall work with the Native American representative or other representatives of descendant communities to identify the scope of work to fulfill the requirements of this mitigation measure, which may include participation in preparation and review of deliverables (e.g., plans, interpretive materials, artwork). Representatives shall be compensated for their work as identified in the agreed upon scope of work. A copy of the Archeological Resources Report (ARR) shall be provided to the representative of the descendant group.

Archeological Data Recovery Program. An archeological data recovery program shall be conducted in accordance with an Archeological Data Recovery Plan (ADRP) if all three of the following apply: 1) a resource has potential to be significant, 2) preservation in place is not feasible, and 3) the ERO determines that an archeological data recovery program is warranted. The project archeological consultant, SFPUC, and ERO shall meet and consult on the scope of the ADRP. The archeological consultant shall prepare a draft ADRP that shall be submitted to the ERO for review and approval.

The ADRP shall identify how the proposed data recovery program will preserve the significant information the archeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.

The scope of the ADRP shall include the following elements:



- Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations.
- Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures.
- Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies.
- Security Measures. Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities.
- Final Report. Description of proposed report format and distribution of results.
- Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

Coordination of Archeological Data Recovery Investigations. In cases in which the same resource has been or is being affected by another project for which data recovery has been conducted, is in progress, or is planned, in order to maximize the scientific and interpretive value of the data recovered from both archeological investigations, the following measures shall be implemented:

- a) In cases where neither investigation has yet begun, both archeological consultants and the ERO shall consult on coordinating and collaboration on archeological research design, data recovery methods, analytical methods, reporting, curation and interpretation to ensure consistent data recovery and treatment of the resource.
- b) In cases where archeological data recovery investigation is already under way or has been completed for a prior project, the archeological consultant for the subsequent project shall consult with the prior archeological consultant, if available; review prior treatment plans, findings and reporting; and inspect and assess existing archeological collections/inventories from the site prior to preparation of the archeological treatment plan for the subsequent discovery, and shall incorporate prior findings in the final report of the subsequent investigation. The objectives of this coordination and review of prior methods and findings will be to identify refined research questions; determine appropriate data recovery methods and analyses; assess new findings relative to prior research findings; and integrate prior findings into subsequent reporting and interpretation.

Human Remains and Funerary Objects. The treatment of human remains and funerary objects discovered during any soil-disturbing activity shall comply with applicable State and Federal laws. This shall include immediate notification of the Office of the Chief Medical Examiner of the City and County of San Francisco (Medical Examiner). The ERO also shall be notified immediately upon the discovery of human remains. In the event of the Medical Examiner's determination that the human remains are Native American remains, the Medical Examiner shall notify the California State Native American Heritage Commission, which will appoint a Most Likely Descendant (MLD). The MLD will complete his or her inspection of the remains and make recommendations or preferences for treatment within 48 hours of being granted access to the site (Public Resources Code section 5097.98(a)).

The landowner may consult with the project archeologist and SFPUC and shall consult with the MLD and ERO on preservation in place or recovery of the remains and any scientific treatment alternatives. The landowner shall then make all reasonable efforts to develop an Agreement with the MLD, as expeditiously as possible, for the treatment and disposition, with appropriate dignity, of human remains and funerary objects (as detailed in CEQA Guidelines section 15064.5(d)). Per PRC 5097.98 (b)(1), the Agreement shall address and take into consideration, as applicable and to the degree consistent with the wishes of the MLD, the appropriate excavation, removal, recordation, scientific analysis, custodianship prior to reinterment or curation, and final disposition of the human remains and funerary objects. If the MLD agrees to scientific analyses of the remains and/or funerary objects, the archeological consultant shall retain possession of the remains and funerary objects until completion of any such analyses unless otherwise specified in the Agreement, after which the remains and funerary objects shall be reinterred or curated as specified in the Agreement.

Both parties are expected to make a concerted and good faith effort to arrive at an Agreement, consistent with the provisions of PRC 5097.98. However, if the landowner and the MLD are unable to reach an Agreement, the landowner, ERO, and SFPUC shall ensure that the remains and/or mortuary materials are stored securely and respectfully until they can be reinterred on the property, with appropriate dignity, in a location not subject to further or future subsurface disturbance, consistent with state law.

Treatment of historic-period human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity, additionally, shall follow protocols laid out in the project's archeological treatment documents, and in any related agreement established between the Medical Examiner and the ERO. The project archeologist shall retain custody of the remains and associated materials while any scientific study scoped in the treatment document is conducted and the remains shall then be curated or respectfully reinterred by arrangement on a case-by case-basis.

Archeological Findings Report. After the conclusion of project ground disturbing work, the archeological consultant shall submit a written report of the findings to the ERO. If the consultant encountered an archeological resource that was determined to be not significant, the consultant shall prepare an Archeological Monitoring or Testing Result Report (AMTRR). The report shall document the observed resources, evaluate the significance of the discovered archeological resource, and describe the archeological and historical research methods employed in the archeological programs undertaken. If the consultant encountered an archeological resource that was determined to be significant, the consultant shall prepare an Archeological Resources Report (ARR). This report has the same content as the AMRR or ATRR but includes the methods employed in the data recovery program, data and analysis of the resource, interpretation of the resource, and discusses curation arrangements. Formal site recordation forms (CA DPR 523 series) shall be attached to the ARR as an appendix.

Once approved by the ERO, copies of the report shall be distributed as follows: California Historical Resources Information System, Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the approved report to the NWIC. The environmental planning division of the planning department shall receive one (1) bound hardcopy of the report. Digital files that shall be submitted to the environmental division include an unlocked, searchable PDF version of the report, GIS shapefiles of the site and feature locations, any formal site recordation forms (CA DPR 523 series), and/or documentation for nomination to the National

Register of Historic Places/California Register of Historical Resources. The PDF report, GIS files, recordation forms, and/or nomination documentation should be submitted via USB or other stable storage device. If a descendant group was consulted during archeological treatment, a PDF of the report shall be provided to the representative of the descendant group.

Interpretative Program. The project archeological consultant shall submit a Cultural Resources Public Interpretative Plan if a significant archeological resource is discovered during a project. As directed by the ERO, a qualified design professional with demonstrated experience in displaying information and graphics to the public in a visually interesting manner, local artists, or community group may also be required to assist the project archeological consultant in preparation of the interpretative plan. If the resource to be interpreted is a tribal cultural resource, the interpretative plan shall be prepared in consultation with and developed with the participation of California Native American tribes traditionally and culturally affiliated with a geographic area of the project. The interpretive plan shall describe the interpretive product(s), locations or distribution of interpretive materials or displays, the proposed content and materials, the producers or artists of the displays or installation, and a long-term maintenance program. The interpretative plan shall be sent to the ERO for review and approval. The interpretive plan shall be implemented prior to completion of project, unless interpretive elements are planned to take place post construction, such as educational events.

Curation. Significant archeological collections and paleoenvironmental samples of future research value shall be permanently curated at an established curatorial facility or Native American cultural material shall be returned to local Native American representatives at their discretion. The facility shall be selected in consultation with the ERO. Upon submittal of the collection for curation the sponsor or archeologist shall provide a copy of the signed curatorial agreement to the ERO.

#### **Mitigation Measure M-CR-2b: Archeological Monitoring**

Prior to the start of construction of each phase of the project, the SFPUC shall submit an Archeological Monitoring Program as applicable for the geographic areas below. In addition, if the records review/search completed for this project is five years or older, then the SFPUC shall consult with the planning department cultural resources staff to determine if an updated records search and/or other action like an updated pedestrian survey is needed to identify if any new archeological sites were discovered after the publication of this document that may require archeological monitoring in additional locations to those required below.

Archeological Monitoring is applicable to areas with high sensitivity for Native American and/or historic era resources as follows:

- Lake Merced Pump Station east to Lake Merced Boulevard, Lake Merced Boulevard between Lake Merced Pump Station and Middlefield Drive (see below regarding local Native American representative to be present during monitoring at this site), Middlefield Drive between Lake Merced Boulevard and Ocean Avenue, Ocean Avenue between Middlefield Drive to Inverness Drive
- Sloat Boulevard between Inverness Drive and 37th Avenue, 37th Avenue between Sloat Boulevard and Vicente Street, and 36th between Sloat Boulevard and Vicente Street

- 34th Ave between Vicente Street and Wawona Street, Wawona Street between 34th Avenue and 42nd Avenue, 42nd between Wawona and Vicente Street
- Ulloa St between 36th Avenue and 35th Avenue and between 32nd Avenue and 33rd Avenue
- 25th Ave between Judah and Martin Luther King Jr. Dr, Martin Luther King Dr between 25th Ave and Transverse Dr, Transverse Dr between Martin Luther King Dr and John F. Kennedy Dr
- ~~Lawton between 23rd Avenue and 21st and 21st Avenue between Lawton and Kirkham Street~~
- 43rd Ave between Judah Street and Lincoln Way, Irving St between 42nd Avenue and 37th Avenue, 37th Avenue between Irving St and Lincoln Way, Lincoln Way between 37th Avenue and 42nd Avenue, 36th between Irving Street and Lincoln Way, Martin Luther King Drive to 47th Avenue to Balboa Street
- Cabrillo Street between 43rd Avenue and 44th Avenue and between 41st Avenue and 36th Avenue
- Clement Street between 44th Avenue and 38th Avenue

Archeological Monitoring Program. The purpose of the archeological monitoring program will be to observe soil disturbing construction activities in order to determine if significant archeological resources are present at the project site and to ensure significant archeological resources are appropriately protected or treated. The SFPUC shall retain the services of an archeological consultant approved by the SF Planning Cultural Resources Team.

The archeological consultant shall undertake an archeological monitoring program as specified herein. The archeological consultant's work shall be conducted in accordance with this measure at the direction of the Environmental Review Office (ERO) in coordination with SFPUC. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment and shall be considered draft reports subject to revision until final approval by the ERO. Reports will be concurrently submitted to SFPUC (i.e., cc'd when sent to the ERO). In addition, the consultant shall be available to conduct data recovery program if required pursuant to this measure. Archeological data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less than significant level potential effects on a significant archeological resource as defined in CEQA Guidelines Sect. 15064.5 (a)(c).

A local Native American representative shall be present during archeological monitoring on Lake Merced Boulevard between Middlefield Drive and Winston Drive, at their discretion, because this work is being conducted in close proximity to a recorded Native American archeological site.

Archeological Monitoring Plan. The archeological monitoring program shall be conducted in accordance with the approved Archeological Monitoring Plan (AMP). The archeological consultant and the ERO shall consult on the scope of the AMP, which shall be approved by the ERO prior to any project-related soils disturbing activities commencing. The ERO in consultation with the project archeologist shall determine what project soils disturbing activities shall be archeologically monitored. The AMP shall be submitted first and directly to the ERO for review and comment (with a copy to SFPUC) and shall be considered a draft subject to revision until final approval by the ERO. The archeologist shall implement the monitoring as specified in the approved AMP during

construction. The archeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the archeological consultant, determined that project construction activities could have no effects on significant archeological deposits.

The AMP shall identify the property types of the expected archeological resource(s) that potentially could be adversely affected by the project, lay out what scientific/ historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions.

Collection During Archeological Monitoring. The monitor is authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. Ecofacts are biological or geological objects or deposits related to human activity, but not manufactured by humans. Examples of ecofactual materials include animal bones, charcoal, plants, and pollen that can tell us about past diet or environments.

Paleoenvironmental Analysis of Paleosols. When a paleosol is identified during monitoring, irrespective of whether cultural material is present, samples shall be extracted and processed for dating, flotation for paleobotanical analysis, and other applicable special analyses pertinent to identification of possible cultural soils and for environmental reconstruction. The results of analysis of collected samples shall be reported on in results reports.

Additional Applicable Measures. An Archeological Findings Report shall be prepared to document the required monitoring (even in the absence of discoveries), and if archeological resources are discovered during monitoring the following items identified in **Mitigation Measure M-CR-2a: Accidental Discovery** shall be implemented as specified in that measure:

- Discovery Identification, Evaluation, and Treatment Determination
- Consultation with Descendant Communities (as applicable)
- Archeological Data Recovery Program (as applicable)
- Coordination of Archeological Data Recovery Investigations (as applicable)
- Human Remains and Funerary Objects (as applicable)
- Archeological Findings Report
- Cultural Resources Public Interpretation (as applicable)
- Curation (as applicable)

#### **Mitigation Measure M-CR-2c: Archeological Testing**

Prior to the start of construction of each phase of the project, the SFPUC shall submit an Archeological Testing Program as applicable for the geographic areas below. In addition, if the records review completed for this project is five years or older, then the SFPUC shall consult with the planning department cultural resources staff to determine if an updated records search and/or other action like an updated pedestrian survey is needed to identify if new archeological sites were discovered after the publication of this MND that may require archeological testing in addition to locations required below.



Archeological testing is applicable to areas identified as within or in close proximity to known Native American and/or historic era archeological sites at the following locations.

- Lake Merced Boulevard between Middlefield Drive and Winston Drive. Testing focusing on Native American resources.
- Clement Street between 38th Avenue and 32nd Avenue. Testing focusing on resources associated with City Cemetery.

Archeological Testing Program. The purpose of the archeological testing program will be to determine to the extent possible the presence or absence of archeological resources and to identify and to evaluate whether any archeological resource encountered on the site constitutes an historical resource under CEQA. The SFPUC shall retain the services of an archeological consultant approved by the Planning Cultural Resources Team.

The archeological consultant shall undertake an archeological testing program as specified herein. The archeological consultant's work shall be conducted in accordance with this measure at the direction of the Environmental Review Officer (ERO). All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment and shall be considered draft reports subject to revision until final approval by the ERO. In addition, the consultant shall be available to conduct an archeological monitoring and/or data recovery program if required pursuant to this measure. Archeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less than significant level potential effects on a significant archeological resource as defined in CEQA Guidelines Sect. 15064.5 (a)(c).

A local Native American representative shall be present during archeological testing on Lake Merced Boulevard between Middlefield Drive and Winston Drive, at their discretion, because this testing is being conducted in close proximity to a recorded Native American archeological site.

Archeological Testing Plan. The archeological testing program shall be conducted in accordance with the approved Archeological Testing Plan (ATP). The archeological consultant and the ERO shall consult on the scope of the ATP, which shall be approved by the ERO prior to any project-related soils disturbing activities commencing. The ATP shall be submitted first and directly to the ERO for review and comment and shall be considered a draft subject to revision until final approval by the ERO. The archeologist shall implement the testing as specified in the approved ATP prior to and/or during construction.

The ATP shall identify the property types of the expected archeological resource(s) that potentially could be adversely affected by the project, lay out what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The ATP shall also identify the testing method to be used, the depth or horizontal extent of testing, and the locations recommended for testing and shall identify archeological monitoring requirements for construction soil disturbance as warranted.

Paleoenvironmental Analysis of Paleosols. When a submerged paleosol is identified, irrespective of whether cultural material is present, samples shall be extracted and processed for dating, flotation for paleobotanical analysis, and other applicable special analyses pertinent to identification of possible cultural soils and for environmental reconstruction. The results of analysis of collected samples shall be reported on in results reports.

Additional Applicable Measures. If archeological resources are discovered during monitoring the following items identified in **Mitigation Measure M-CR-2a: Accidental Discovery** shall be implemented as specified in that measure:

- Discovery Identification, Evaluation, and Treatment Determination
- Consultation with Descendant Communities (as applicable)
- Archeological Data Recovery Program (as applicable)
- Coordination of Archeological Data Recovery Investigations (as applicable)
- Human Remains and Funerary Objects (as applicable)
- Archeological Findings Report (as applicable)
- Cultural Resources Public Interpretative Plan (as applicable)
- Curation (as applicable)

## Operation

Normal operations would not involve ground disturbing activities that would have the potential to disturb buried cultural resources and, therefore, would have no impact.

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### **Impact CR-3: The proposed project could disturb any human remains, including those interred outside of formal cemeteries. (*Less than Significant with Mitigation*)**

The 2014 discovery of deeply buried Native American human remains in downtown San Francisco in a location and stratum that had previously been assessed to have a low potential for yielding archeological remains demonstrates gaps in the current understanding of Native American land use history. Given this lack of understanding, it is possible Native American human remains may be encountered during project construction. There are no known Native American archeological sites that contain human remains within the project; however, the possibility of encountering human remains, either as an isolate or within the context of a buried Native American deposit, cannot be entirely discounted. There is also potential to encounter human remains associated with the historic-era City Cemetery.

The project has the potential to adversely impact human remains, if any are present within the project site. In the event of a discovery, the project would comply the provisions of California Health and Safety Code, section 7050.5, with respect to the discovery of human remains. Public Resources Code section 5097.98 also regulates the treatment and disposition of human remains encountered during construction. **Mitigation Measure M-CR-2a: Accidental Discovery** includes the required procedures to address, protect, and treat human remains should any be discovered during archeological monitoring or testing, or project ground disturbing work. The mitigation measures call for compliance with applicable state and federal laws as well as identifying archeological protocols regarding the treatment of human remains and of associated or

unassociated funerary objects discovered during any soils-disturbing activity. With implementation of **Mitigation Measures M-CR-2a: Accidental Discovery, Mitigation Measure M-CR-2b: Archeological Monitoring, and Mitigation Measure M-CR-2c: Archeological Testing**, as described above, the project's impacts on human remains would be less than significant with mitigation.

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**Impact C-CR-1: The proposed project, in combination with cumulative projects, would not result in a significant cumulative impact related to historical resources. (*Less than Significant with Mitigation*)**

Of all the cumulative projects, only the Merced Manor Project has the potential to affect the historic Central Pump station or its environs, and repair of the Merced Manor Reservoir roof structure would have no direct effects on the Central Pump Station or indirect effects on its historic integrity or significance. Cumulative projects thus would not contribute to any significant effects on the Central Pump Station.

The buried pipeline and ancillary aboveground structures could affect the historic significance or integrity of historic districts along the pipeline alignment, a potentially significant impact. One cumulative project – the Parkmerced Project – has the potential to affect the same historic district as the project pipeline alignment (the Parkmerced Historic District). The proposed project in combination with this cumulative project has the potential to result in a significant cumulative impact on built environment historic resources. With incorporation of **Mitigation Measure M-CR-1b, Protection of Sidewalk and Roadway Elements in Historic Districts**, however, the project's contribution to this potentially significant cumulative impact would not be considerable. Therefore, the project's cumulative impact would be less than significant with mitigation.

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**Impact C-CR-2: The proposed project, in combination with cumulative projects, would not result in significant cumulative impacts on archeological resources and human remains. (*Less than Significant with Mitigation*)**

Project-related impacts on archeological resources and human remains are site-specific and generally limited to a project's construction area. For these reasons, the project, in combination with the St. Ignatius Academic Building Addition, Caltrans Pavement Rehabilitation, Sunset Reservoir, Merced Manor Project, and Parkmerced projects could have a significant cumulative impact on archeological resources and human remains. However, with implementation of **Mitigation Measure M-CR-2a: Accidental Discovery, Mitigation Measure M-CR-2b: Archeological Monitoring, and Mitigation Measure M-CR-2c: Archeological Testing**, as described above, the project's contribution to potentially significant cumulative impacts on archeological resources and human remains would be less than cumulatively considerable. Therefore, the project's cumulative impact would be less than significant with mitigation.

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## E.5 Tribal Cultural Resources

| Topics :                                                                                                                                                                                                                                                                                                                                                                                                                  | Potentially Significant Impact      | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>TRIBAL CULTURAL RESOURCES.</b> Would the project:                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                                    |                                     |                          |                          |
| a) 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, or 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), or                                                                                                                                                                                                                            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/>                | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> |
| 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. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | <input type="checkbox"/>            | <input checked="" type="checkbox"/>                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Impact TCR-1: The proposed project could result in a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code section 21074. (*Less than Significant with Mitigation*)**

**Construction**

Pursuant to CEQA section 21074, tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are also either (a) included or determined to be eligible for inclusion in the California register or (b) included in a local register of historical resources as defined in CEQA section 5020.1(k). Based on discussions with Native American representatives, in San Francisco, Native American archeological resources are presumed to be potential tribal cultural resources. In addition, during consultation in 2021 Native American representatives identified both the locations of modern natural water sources and historical water sources as culturally important to the local Native American tribal groups and, as such, potential locations of tribal cultural resources.

Pursuant to CEQA section 21080.3.1(d), on December 11, 2024, the planning department contacted California Native American tribes that are traditionally and culturally affiliated with the geographic area of the project, providing a description of the project and requesting comments on the identification, presence, and significance of tribal cultural resources in the project vicinity. During the 30-day comment period, two parties followed up with the planning department. The planning department consulted with the Amah Mutsun Tribal Band of Mission San Juan Bautista and the Association of Ramaytush Ohlone. Both groups concurred with the determinations of the cultural resource review conducted by the planning department that determined that that archeological testing be conducted to determine whether a known Native American archeological site in close proximity to the project extends into the area of project work within the right-of-way.<sup>44</sup> In addition, the cultural resource review determined that archeological monitoring should be conducted in areas identified as having high sensitivity for Native American archeological resources.

Both the Amah Mutsun Tribal Band of Mission San Juan Bautista and the Association of Ramaytush Ohlone requested that cultural sensitivity training be conducted prior to project ground disturbance. In addition, they both requested Native American monitoring of excavation in close proximity to the recorded Native American archeological site on the shores of Lake Merced as noted below. These recommendations were incorporated into **Mitigation Measure M-CR-2a: Accidental Discovery**, **Mitigation Measure M-CR-2b: Archeological Monitoring**, and **Mitigation Measure M-CR-2c: Archeological Testing** (see Section E.4, Cultural Resources). In addition, the tribes requested to be consulted regarding preservation in place and interpretation, if a tribal cultural resource is encountered during archeological testing or project ground disturbance, which is reflected in **Mitigation Measure M-TCR-1: Tribal Cultural Resources Program**.

A tribal cultural resource is adversely affected when a project impacts its significance. As noted under Impact CR-2 the project has potential to impact Native American archeological resources. Disturbance of previously unidentified Native American archeological resources, which are presumed to be tribal cultural resources, would be considered a significant impact. If a potential tribal cultural resource is discovered during construction, the SFPUC would be required to implement **Mitigation Measure M-TCR-1: Tribal**

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44 San Francisco Planning Department, *Cultural Resource Review Memo for the Westside Potable Emergency Firefighting Water System Project*, December 2024, updated May 2025. Kari Hervey-Lentz. San Francisco, California.



**Cultural Resources Program**, which would reduce impacts to less-than-significant levels by requiring preservation-in-place and an interpretive program for discovered resources.

Implementation of **Mitigation Measures M-TCR-1: Tribal Cultural Resources Program, M-CR-2a: Accidental Discovery, M-CR-2b: Archeological Monitoring, and M-CR-2c: Archeological Testing** would require the appropriate involvement of concerned Native Americans in the treatment of tribal cultural resources discovered during construction and ensure that any such resource would be preserved, or that the information it represents would be preserved and interpreted to the public. These steps would ensure that project excavation would not cause a substantial adverse change in the significance of tribal cultural resources that could be encountered during construction, and that the project's impact would be less than significant with mitigation.

### **Mitigation Measure M-TCR-1: Tribal Cultural Resources Program**

Preservation in Place. In the event of the identification or discovery of a tribal cultural resource, the ERO, the SFPUC, and California Native American tribes traditionally and culturally affiliated with a geographic area of the project, shall consult to determine whether preservation in place would be feasible and effective. If it is determined that preservation-in-place of the tribal cultural resource would be both feasible and effective, then the SFPUC in consultation with local Native American representatives and the Environmental Review Officer (ERO) shall prepare a tribal cultural resource preservation plan (TCRPP). If the tribal cultural resource is an archeological resource of Native American origin, the archeological consultant shall prepare an archeological resource preservation plan (ARPP) in consultation with the local Native American representative, which shall be implemented by the SFPUC during construction. The consultant shall submit a draft ARPP to Planning and the SFPUC for review and approval. If the ERO, in consultation with local Native American representatives and SFPUC determines that preservation-in-place of the tribal cultural resource is not a sufficient or feasible option, then archeological data recovery shall be implemented as required by the ERO and in consultation with affiliated Native American representatives if the tribal cultural resource is an archeological resource of Native American origin.

Interpretive Program. The SFPUC, in consultation with California Native American tribes traditionally and culturally affiliated with a geographic area of the project, shall prepare a Tribal Cultural Resources Public Interpretation Plan (TCRPI) to guide the Tribal Cultural Resource interpretive program. The TCRPI may be prepared in tandem with the Cultural Resources Public Interpretative Plan if required. The TCRPI shall be submitted to ERO for review and approval prior to implementation of the program. The plan shall identify, as appropriate, proposed locations for installations or displays, the proposed content and materials of those displays or installation, the producers or artists of the displays or installation, and a long-term maintenance program. The interpretive program may include artist installations, preferably by local Native American artists, oral histories with local Native Americans, cultural displays, educational panels, or other interpretive elements agreed upon by the ERO, SFPUC, and local Native American representatives. Upon approval of the TCRPI and prior to project occupancy, the interpretive program shall be implemented by the SFPUC. The ERO and SFPUC shall work with the Native American representative to identify the scope of work to fulfill the requirements of this mitigation measure, which may include participation in preparation and review of deliverables (e.g., plans, interpretive materials, artwork). Tribal representatives shall be compensated for their work as identified in the agreed upon scope of work.

## Operation

Project operation would not have any impacts on tribal cultural resources because it would not entail excavation that could encounter tribal cultural resources.

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### **Impact C-TCR-1: The proposed project, in combination with cumulative projects, would not result in a significant cumulative impact on tribal cultural resources. (*Less than Significant with Mitigation*)**

Project-related impacts on tribal cultural resources are site-specific and generally limited to a project's construction area. For these reasons, the project, in combination with the St. Ignatius Academic Building Addition, Caltrans Pavement Rehabilitation, Sunset Reservoir, Merced Manor, and Parkmerced projects, which are immediately adjacent to the project and could affect the same resource, could have a significant cumulative impact on tribal cultural resources. However, with implementation of **Mitigation Measures M-CR-2a: Accidental Discovery, M-CR-2b: Archeological Monitoring, M-CR-2c: Archeological Testing** and **M-TCR-1: Tribal Cultural Resources Program**, as described above, the project's contribution to potential significant cumulative impacts on tribal cultural resources would be less than cumulatively considerable (less than significant with mitigation).

## E.6 Transportation and Circulation

| Topics:                                                                                                                                                                                                                                                                                                                                                                | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>TRANSPORTATION AND CIRCULATION.</b> Would the project:                                                                                                                                                                                                                                                                                                              |                                |                                                    |                                     |                          |                          |
| a) Involve construction that would require a substantially extended duration or intensive activity, and the effects would create potentially hazardous conditions for people walking, bicycling, or driving, or public transit operations; or interfere with emergency access or accessibility for people walking or bicycling; or substantially delay public transit? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Create potentially hazardous conditions for people walking, bicycling, or driving or public transit operations?                                                                                                                                                                                                                                                     | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Interfere with accessibility of people walking or bicycling to and from the project site, and adjoining areas, or result in inadequate emergency access?                                                                                                                                                                                                            | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d) Substantially delay public transit?                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e) Cause substantial additional vehicle miles traveled or substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow travel lanes) or by adding new roadways to the network?                                                                                                         | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f) Result in a loading deficit, and the secondary effects would create potentially hazardous conditions for people walking, bicycling, or driving; or substantially delay public transit?                                                                                                                                                                              | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| g) Result in a substantial vehicular parking deficit, and the secondary effects would create potentially hazardous conditions for people walking, bicycling, or driving; or interfere with accessibility for people walking or bicycling or inadequate access for emergency vehicles; or substantially delay public transit?                                           | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

This analysis has been prepared in accordance with the San Francisco Planning Department Transportation Impact Analysis Guidelines for Environmental Review.<sup>45</sup> The planning department uses significance criteria to facilitate the transportation analysis and address the CEQA Guidelines Appendix G checklist, separating the significance criteria into construction and operation. Significance criterion E.6(a) addresses construction impacts and is evaluated in TR-1 below, while significance criteria E.6(b) through E.6(g) address operational impacts and are evaluated jointly in TR-2. Operational activities that involve construction, such as the repair and replacement of equipment, are assessed in the construction impact analysis below.

## TRANSPORTATION SETTING

The existing transportation and circulation conditions of the project area are generally described below.

**Regional Roadways.** The project area is within 0.25 miles of two regional roadways, State Routes 1 and 35, as shown on [Figure 1](#). The project area is generally bounded by Park Presidio Boulevard and State Route 1 (19th Avenue) on the east and the Great Highway on the west. In the vicinity of the project area, State Routes 1 and 35 are four- to six-lane roadways that connect to U.S. 101 in the north and Interstate-280 to the south.

**Local Roadways.** The project alignment is predominantly within the public right-of-way, and existing SFPUC facilities within commercial and residential neighborhoods. The local roadways along the project and project variant alignment include: Clement, Anza, ~~and~~ Cabrillo and Fulton Streets, 19th, 22nd, 44th, and 47th Avenues in the Outer Richmond District neighborhood; Crossover, Transverse, John F. Kennedy, and Martin Luther King Jr. Drives in Golden Gate Park; Lincoln Way, Irving, Lawton, Ortega, Quintara, Ulloa, and Wawona Streets, ~~21st~~, 23rd, 24th, 25th, 27th, 28th, 30th, 34th, and 42nd Avenues, and Sunset Boulevard in the Outer Sunset District neighborhood; and Sloat Boulevard/Highway 35, 22nd and 23rd Avenues, Ocean Avenue, Middlefield Drive, and Lake Merced Boulevard from Middlefield Drive to Lake Merced Pump Station between Higuera Avenue and Brotherhood Way in the Lakeshore (inclusive of Lake Merced Park and San Francisco University), and Parkside neighborhoods of the City of San Francisco.

**Bicycle Facilities.** On-street bicycle facilities include City-designated routes that are part of the San Francisco bicycle network. Bicycle routes are classified as *class I*, *class II*, *class III*, or *class IV* facilities. Class I bikeways are bike paths with exclusive rights-of-way for use by bicyclists, with minimal cross flow by motorized vehicles. Class II bikeways are bike lanes striped within the paved areas of roadways and established for the exclusive use of bicyclists. Class III bikeways are signed bike routes that allow bicycles to share streets with vehicles. Class IV bikeways are on-street separated bikeways reserved for bicyclists, with physical separation between the bikeway and vehicle travel lanes. The project alignments follow and/or cross various bikeways at the following locations:<sup>46,47</sup>

- Class I bikeways: Bike path (Golden Gate Park from 22nd Avenue to Transverse Drive and from Lincoln Way to Martin Luther King Jr. Drive), John F Kennedy Drive, Lake Merced Boulevard, Martin Luther King Jr. Drive

45 San Francisco Planning Department, Transportation Impact Analysis Guidelines for Environmental Review, October 2019, <https://sfplanning.org/project/transportation-impact-analysis-guidelines-environmental-review-update#impact-analysis-guidelines>, accessed June 19, 2024.

46 SFMTA, San Francisco Bike Network Map, May 30, 2019, <https://www.sfmta.com/maps/san-francisco-bike-network-map>, accessed June 20, 2024.

47 San Francisco Bicycle Coalition, San Francisco Bike Map & Walking Guide, 2014, [https://www.sfbike.org/wp-content/uploads/2014/03/SF\\_Bike\\_Map\\_and\\_Walking\\_Guide\\_2014.pdf](https://www.sfbike.org/wp-content/uploads/2014/03/SF_Bike_Map_and_Walking_Guide_2014.pdf), accessed June 20, 2024.

- Class II bikeways: 20th Avenue, Anza Street, Cabrillo Street, Kirkham Street, Ocean Avenue, Ortega Street, Sloat Boulevard, Vicente Street
- Class III bikeways: 34th Avenue, 35th Avenue, 47th Avenue, Clement Street, Fulton Street, John F Kennedy Drive, Point Lobos Avenue, Sloat Boulevard, Transverse Drive
- Class IV bikeway: Lake Merced Boulevard

**Pedestrian Facilities.** Pedestrian facilities generally include sidewalks, crosswalks, curb ramps, pedestrian signals, and streetscape and landscape amenities (e.g., benches, tree-lined buffers, planters, bulb-outs, street lighting). Pedestrian facilities vary across the street network within the project area.

**Transit.** The project pipeline alignments follow, are adjacent to, and/or cross various municipal bus routes at multiple locations,<sup>48,49</sup> including the following:

#### San Francisco Muni

- Line 29 on 25th Avenue at Clement Street and Cabrillo Street, on Transverse Drive from Crossover Drive to Martin Luther King Jr. Drive and on Lincoln Way from 21st to 22nd at 25th Avenue, on Sunset Boulevard from Lincoln Way to Ulloa Street, and on Lake Merced Boulevard from Middlefield Drive to Winston Drive
- Line 1, 1X at Clement Street and 32nd Avenue
- Line 38, 38R on Geary Boulevard at 19th, 44th, and Point Lobos Avenue at 44th Avenue
- Line 18 at Cabrillo Street and 47th Avenue and on Lake Merced Boulevard from Middlefield Drive to Winston Drive
- Line 18, 31 on Balboa Street at 44th Avenue
- Line 31 at Balboa Street and 19th Avenue
- Line 5, 5R on Fulton Street at 47th Avenue
- Line 7 on Lincoln Way from 20th to 21st Avenue, on Lawton Street at 22nd and 23rd Avenues, and on Noriega Street at 27th, 30th and 42nd Avenues, and Sunset Boulevard
- Line N on Judah Street at 42nd Avenue
- Line 48, 66 on Quintara Street between 24th and 28th Avenues, and Sunset Boulevard
- Line 48 on Quintara Street at 42nd Avenue
- Line L on Taraval Street at 28th and 42nd Avenues, and Sunset Boulevard
- Line 66 on Ulloa Street between 29th and 30th Avenues
- Line 28, 28R, 23 on Sloat Boulevard between Highway 1 and 23rd Avenue
- Line 58 on Lake Merced Boulevard from Middlefield Drive to Winston Drive
- Line 57 on Lake Merced Boulevard from Winston Drive to Font Boulevard

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48 SFMTA, Muni Service Map, 2024, <https://www.sfmta.com/maps/muni-service-map>, accessed April 2, 2025

49 SamTrans, SamTrans System Map, <https://www.samtrans.com/samtrans-system-map>, accessed April 2, 2025.



San Mateo County SamTrans

- Line 122 on Lake Merced Boulevard

**Emergency Access Conditions.** Emergency vehicle access to the project sites is provided by the surrounding public and private street network (most of the project sites are located within or adjacent to city streets). As described in Section E.14, Public Services, there are seven fire stations and two police stations within 0.25 miles of the project area.

**Loading and Parking Conditions.** The project alignment is along approximately 16 miles of city streets, portions of which contain street parking and likely contain passenger loading zones, commercial loading zones, or no-stopping/tow-away zones.

**Project Travel Demand.** Travel demand for the project includes worker and hauling truck trips to and from the project area while construction work is being completed. Depending on the construction phase, 30 to 180 passenger vehicle trips (one-way) for workers are anticipated; however, each work crew at a given site is expected to have 5 to 10 construction workers. Approximately 51,700 one-way haul truck trips are estimated to occur over the 15-year construction period.

Operation of the project would involve a limited amount of employee travel for routine maintenance of the new pipeline, valves, vaults, pumps, appurtenances, and hydrants. Operation and maintenance would be performed by existing SFPUC staff. No additional workers are expected to be hired to operate and maintain the project, and existing employees would not need to substantially alter their work travel to drive to the project components. Therefore, the project would not result in an increase in worker automobile travel.

**Impact TR-1: The proposed project would involve construction that would require a substantially extended duration or intensive activity, but the secondary effects would not create potentially hazardous conditions for people walking, bicycling, or driving, or public transit operations; or interfere with emergency access or accessibility for people walking or bicycling; or substantially delay public transit. (*Less than Significant*)**

Construction activities result in temporary conditions and usually do not result in permanent changes to the transportation circulation network. Construction-related vehicles traveling to and from the project construction work area would share the surrounding roadways with other vehicles, as well as with bicyclists and people walking. In general, increased construction traffic from any project could result in potential conflicts between construction trucks (which have slower speeds and wider turning radii than automobiles) and automobiles, bicyclists, and people walking. Construction truck movements during periods of peak traffic flow would have a greater potential to create conflicts than truck movements during non-peak hours because of the greater number of vehicles on the streets. In addition, construction activities could result in physical obstructions to the public right-of-way that could interfere with emergency access or accessibility for people walking, bicycling, driving; create hazardous conditions; or result in delays to transit. Compliance with City codes and regulations typically ensures that construction activities do not result in potentially hazardous conditions to people walking, bicycling, and riding transit and/or transit conditions. Project construction would comply with the Transportation Agency's Blue Book,<sup>50</sup> which sets the rules and guidance for work in San Francisco's public rights-of-way such that construction work can be done safely and create the least possible interference with pedestrian, bicycle, transit, and vehicular traffic. The San Francisco Planning Department's Transportation Impact Analysis Guidelines' Construction Analysis Screening Criteria

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50 San Francisco Municipal Transportation Agency, Regulations for Working in San Francisco Streets, "Blue Book", revised September 26, 2024.

Checklist<sup>51</sup> sets forth screening criteria for determining whether or not further analysis of potential construction impacts is needed. The screening criteria use a two-step approach that first considers project context. If the project context is such that relatively little travel activity could be disrupted by construction activities, then a detailed construction analysis is not needed. If, however, the project site context includes travel activity that could be substantially disrupted by project construction activities, then consideration of the duration and magnitude of construction activities is considered to determine if further evaluation is warranted. These screening criteria include the following:<sup>52</sup>

1. **“Project Site Context.** The level of travel activity in the project site study area (site context), including volumes of people walking, bicycling, riding transit, and driving, as well as the presence of transit facilities (routes and/or stops) and emergency service operator facilities are such that further construction analysis would not be needed. ... The following are examples of project site context such that further construction analysis would not be needed:
  - a. The site surrounding is not well-served by multiple other ways of travel ... and may be characterized by a lack of or substandard sidewalks, bicycle facilities, or transit routes or transit stops in the study area such that there would be little interference with modes of travel due to project construction activities; and
  - b. The amount of excavation is less than two levels below ground surface; and/or
  - c. The amount of demolition would result in less than 20,000 cubic yards of material removed from the site.”
2. **“Construction Duration and Magnitude.** The level of intensity of project construction activities as well as the anticipated duration of project construction such that further construction analysis would not be needed. ... The following are examples under which the construction magnitude and duration would be such that further construction analysis would not be needed ... :
  - d. Construction is anticipated to be completed in 30 months or less.
  - e. Construction of a project is not multi-phased.”

The project site context is an urban area characterized by regional and local roadways and pedestrian, bicycle, and transit facilities within residential neighborhoods and commercial and recreational areas as mentioned above. Temporary sidewalk, parking lane, bicycle lane, and/or travel lane closures along these roadways would be required for construction of some project components for construction or staging of equipment and materials. For pipeline construction within the public right-of-way, the duration of construction in any one area would be limited because pipeline construction would move at approximately 20 to 30 feet per day and construction of each segment or phase would be approximately 2 to 2.5 years in total duration. For construction of each pump station, which would not be within the right-of-way but would be at SFPUC facilities, the duration of construction is also anticipated to be approximately 2 to 2.5 years. Construction would be multi-phased over approximately 15 years, and given the site context, additional discussion of potential transportation-related impacts is provided. The project would comply with SFPUC Standard Construction Measure 4, Traffic, which requires all projects implement traffic control measures sufficient to maintain traffic and pedestrian circulation on streets affected by construction. Where lane

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51 San Francisco Planning Department, Transportation Impact Analysis Guidelines for Environmental Review, Appendix N Construction, October 2019, <https://sfplanning.org/project/transportation-impact-analysis-guidelines-environmental-review-update#impact-analysis-guidelines>, accessed June 18, 2024.

52 Ibid.

closures are required, the standard construction measure would specify how safe access for people walking, bicycling, driving and emergency access would be maintained in accordance with the requirements of the Transportation Agency Blue Book and related project-specific directives issued by the Transportation Agency.

### **Potentially Hazardous Conditions and Accessibility During Construction**

Construction would require sidewalk and travel and parking lane closures, as well as bicycle lane closures on streets where bicycle lanes exist between the parking and travel lanes. These temporary lane closures for construction would be phased as construction proceeds along the alignment. Construction activities along the alignment would occur one or two blocks at a time, and temporary sidewalk and lane closures would proceed along the alignment in that fashion. Local vehicular access would be preserved on streets by maintaining at least one open lane in each direction, supplemented with the presence of flaggers to direct traffic consistent with Transportation Agency Blue Book requirements.

Pursuant to the Transportation Agency Blue Book, on weekdays, work resulting in shifting or closing travel lanes is regulated. The SFPUC would comply with these Transportation Agency Blue Book restrictions on travel lane closures and the project-specific traffic control requirements of the Transportation Agency traffic engineer. Temporary travel lane closures during construction would not create hazardous conditions because they would comply with requirements of the Transportation Agency Blue Book and temporary traffic control devices (e.g., signs, flaggers) in accordance with the provisions set forth in the California Manual on Uniform Traffic Control Devices.

The project-specific traffic control measures pursuant to SFPUC Standard Construction Measure 4 would include details related to construction activities including construction hours, locations and times when the various lane closures would occur, and a detour program, where required. As part of the tailored SFPUC standard construction measures, protocols would be identified to maintain access to emergency service providers, and residences and businesses, where feasible. Coordination and communication protocols would ensure reasonable notice so that residents and businesses can make alternative plans for daytime hours during open trench and active construction in front of their location. At night, the trenches would be plated to return access until the next morning. Travel lane closures would only occur during daytime hours, as the construction contractor would be required per the Transportation Agency Blue Book encroachment permit requirements to use steel plates to restore vehicle access at the end of each workday.

**People Walking.** There are sidewalks on all streets along the alignment. Construction activities may require temporary sidewalk closures in the segment under construction, and people walking would be detoured to the nearest intersection. The construction management plan would include measures required to maintain pedestrian circulation through the work area for people walking. Where complete sidewalk closures are required, alternative pedestrian access walkways and detours would be implemented with adequate signage. For all pedestrian facilities, the alternate path of travel would be required to meet the minimum width to maintain ADA compliance.

**People Bicycling.** There are class I, II, III, and IV bicycle facilities along the project alignment. On roadway segments with striped bicycle lanes, it is likely that bicycle lanes would be closed for the duration of construction, and bicyclists would need to share the travel lane with vehicles. Temporary bicycle lane closures during construction would not create hazardous conditions because they would comply with the requirements of the Transportation Agency Blue Book. On streets with two travel lanes each way, the temporary parking, bicycle, and/or travel lane closures would reduce the roadway capacity and require all

vehicles and bicyclists to use the remaining travel lane. On streets with one travel lane each way, alternate one-way traffic operations would likely be required, and bicyclists would also share the travel lane with vehicles.

The construction management plan would indicate the use of flaggers, and installation of warning and detour signs advising motorists of changed conditions and/or to follow appropriate detour routes well in advance of the temporary closure. Thus, construction activities would not interfere with accessibility for people bicycling. Advance warning signs stating “Share the Road” would be posted for the safety of bicyclists.

### **Potential Public Transit Delays During Construction**

Construction activities would occur within the local roadways. Transit operations and bus stops along the alignment would be maintained throughout construction and may be slightly relocated. Sidewalk closures may require temporary changes to transit stops, such as relocation or temporarily discontinued stops, if authorized by the Transportation Agency. This would increase the travel distance for people walking and may be an inconvenience to some people walking; however, access to existing or relocated public transit stops along the alignment would be maintained. As part of the construction management plan, the SFPUC or its contractor(s) would be required to post appropriate signage, indicating temporarily discontinued stops and temporary new stops. Lane closures and the minimal additional construction-related vehicles could result in temporary and localized congestion on these streets; however, construction would not substantially increase vehicle congestion to the extent that significant delays to transit operations would occur.

### **Emergency Access During Construction**

Temporary travel lane closures would be reviewed by the Transportation Agency so that emergency access is not impaired in the project areas. In addition, in some instances, emergency vehicles would be able to use other east-west or north-south arterials to reach their destination. Pursuant to the Transportation Agency Blue Book encroachment permit requirements, SFPUC or its contractor(s) would be required to identify any detour routes and locations where detour signs would be implemented and would incorporate the detour plans into the construction management plan. These detours would be reviewed by emergency service providers in San Francisco, as applicable. Thus, while construction could potentially result in increased congestion, it would not result in potentially hazardous conditions or substantially interfere with accessibility for people walking or bicycling, nor would it interfere with emergency access.

### **Effects on Transportation Network**

Overall, construction activities would be temporary and would not involve a substantial intense activity that would affect the transportation network and construction would be conducted in accordance with City of San Francisco construction requirements. Therefore, construction would not result in potentially hazardous conditions for people walking, bicycling, or driving, or interfere with emergency access or accessibility for people walking and bicycling during construction, or substantially delay transit.

The initial phases of project construction are anticipated to begin in 2026 with operations starting in 2031; however, later phases of the project would last until 2040. Although construction would be phased over a 15-year construction period, impacts in any particular area would be of limited duration, with open trench construction lasting on average 2 weeks at any one location along the pipeline, trenchless crossings requiring about 11 weeks at roadway intersections where required, and emergency pump stations requiring 24 to 30 months for the construction. Although there would be a total of approximately 51,700 truck trip over

the entire construction period, the number of construction trucks traveling to and from the project sites would vary, depending on the type of construction activity, and the trips would also be spread out geographically over the entire pipeline alignment and three pump station sites. Over the approximately 15-year construction period, the daily number of truck trips would average around 13 trips.

In addition, depending on the construction phase, 30 to 180 passenger vehicle trips (one-way) for workers are anticipated. Construction workers would primarily work onsite between 7 a.m. and 5 p.m., with most workers arriving at the project sites before the morning commute peak hour and departing during the afternoon commute peak hour. Construction activities and staging areas would be within the pipeline alignment and pump station sites. Pump station construction would not occur on parcels containing public transit infrastructure. Construction of the project's pipeline and appurtenances would mostly occupy the parking lane and one travel lane on each street along the alignment. Temporary closure of city blocks and short detours could occur at times during pipeline construction depending on traffic needs, but local access would generally be maintained for residents and businesses throughout project construction. The project would not require permanent changes to transit facilities, including transit stops, though bus stops may be relocated temporarily during construction when lanes are closed for pipeline construction.

Where the project's pipeline alignment crosses Muni light rail lines and Caltrans rights-of-way, trenchless crossings may be employed if required by these agencies, though other methods could be used by SFPUC to maintain service if trenchless crossings are not required. Maintaining service on light rail lines would minimize if not avoid affects to public transit and transportation networks, specifically at locations where construction would cross the L-Taraval Muni light rail line and the N-Judah Muni light rail line.

In accordance with the Blue Book, the SFPUC would ensure that pedestrians are notified of alternative pedestrian access routes and detours by posting adequate signage. Furthermore, in accordance with Blue Book requirements, the SFPUC would coordinate with the Transportation Agency and Public Works for temporary closures of streets and sidewalks should that be necessary.

In addition, the SFPUC's Standard Construction Measure 4 (Traffic) requires implementing traffic control measures as part of the project to minimize potential impacts from truck traffic on circulation and public transit operations and reduce potential safety hazards associated with proposed construction activities. These traffic control measures could include scheduling truck trips during non-peak hours to the extent feasible; deploying flaggers where workers or equipment would temporarily block a travel lane for access into and out of project sites; using flaggers, illuminated signs, a temporary stop sign, or a combination of these methods to slow approaching traffic where construction trucks are making wide turns; storing all equipment and materials in designated on-site staging areas to minimize obstruction of traffic, and employing measures to maintain safe pedestrian circulation on sidewalks affected by construction of the project.

The site's location is in an urban environment that contains multiple roadway and sidewalk options. Given the limited duration of work at each location (average 2 weeks at any one location) and the relatively low number of project-related average daily truck and worker trips, as well as implementation of the SFPUC's Standard Construction Measure 4 (Traffic) and compliance with the Blue Book, the extended duration of project construction or intense activity would not result in significant interference with people walking, bicycling, or driving, including transit. The project would also not create potentially hazardous conditions or substantially interfere with accessibility during construction of the project with these traffic control measures. No mitigation would be required.



Although project construction could temporarily generate additional truck and vehicle trips, construction-related trips would not increase to a level such that emergency vehicles in the project vicinity would be hindered, especially given the project's required implementation of Standard Construction Measure 4 (Traffic), as explained above. As a result, the project would result in a less-than-significant impact relative to the creation of inadequate emergency access. No mitigation would be required.

As described above, project construction activities would not result in significant transportation impacts. For other construction activities that affect the transportation network, the Transportation Agency Blue Book and other city and state regulations require maintaining pedestrian circulation and implementing construction safety measures for people walking, bicycling, and driving to reduce such impacts. With implementation of these regulations, including the project's construction management plan, project construction would not result in potentially hazardous conditions for people walking, bicycling, or driving, or interfere with emergency access or accessibility for people walking, bicycling, or driving during construction, or substantially delay transit. The project's construction-related transportation impacts would, therefore, be less than significant.

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**Impact TR-2: Operation of the proposed project would not result in significant transportation impacts. (Less than Significant)**

After construction of each pipeline segment or other project component is completed in a particular project area, vehicular circulation and pedestrian and bicycle access would be restored to their general pre-construction conditions. Project operations would rely on existing staff and would be similar to existing operations, requiring routine inspections as well as repair and maintenance of the new pipeline, valves, vaults, pumps, appurtenances, and hydrants to ensure proper operation. Operators would conduct leak repairs for pipes as needed and would exercise valves, perform pressure tests, and access the valve vaults for maintenance approximately once a year. A crew of one or two people with one maintenance vehicle once per month could be required, which would result in negligible vehicle miles traveled. These operations would generally occur in public rights-of-way and could include temporary closure of travel lanes, bicycle lanes, and sidewalks. These types of lane closures would be similar to, but less intrusive than, the construction impacts discussed above under Impact TR-1 and would be less than significant.

Project operations would not result in a need for additional employees and, consequently, there would be no substantial increase in worker vehicle trips (i.e., vehicle miles traveled). Therefore, operation of the project would not result in potentially hazardous conditions for people walking, bicycling, or driving, or public transit operations (E.6(b)); interfere with accessibility for people walking or bicycling, or result in inadequate emergency access (E.6(c)); result in substantial transit delay (E.6(d)); cause substantial additional vehicle miles traveled or substantially induce additional automobile travel (E.6(e)); result in a loading deficit (E.6(f)); or result in a substantial vehicular parking deficit (E.6(g)). As a result, the impact of operations on transportation and circulation would be less than significant. No mitigation would be required.

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**Impact C-TR-1: The proposed project, in combination with cumulative projects, would not result in a significant cumulative impact on transportation and circulation. (Less than Significant)**

The cumulative analysis considers the construction-phase traffic of the project and cumulative projects where construction schedules would overlap. The geographic scope for potential cumulative impacts

includes roadways where the cumulative projects have the potential for overlapping effects with the project (i.e., use of same roadways). Construction traffic from all of the identified cumulative projects has the potential to use the same roadways that would be used by construction traffic associated with the project, and construction traffic from cumulative projects could use streets where lane closure would occur for construction of the project. Operational traffic from most of the cumulative projects would be minimal, because infrastructure improvements such as the Ocean Beach Project, Vista Grande Project and SFPUC projects at Merced Manor Reservoir and Sunset Reservoir would be operated by existing staff once construction is complete. The PG&E Power Acquisition Project would generate new traffic resulting from new employees who would travel to SFPUC headquarters and the operations center at Pier 23, but those trips would occur in a different part of the city and not in the area near the project. The Parkmerced Project could generate substantial operational vehicle miles traveled. The EIR for the Stonestown Development Project found that the project would not have significant impacts associated with hazards or accessibility and would not substantially induce VMT compared to the existing VMT but would result in significant unavoidable transit delays. The Parkmerced Project EIR concluded that the project would have significant and unavoidable impacts on the transportation network, generating 226,500 new vehicle miles traveled per day.

Construction of the project and cumulative projects could result in a significant cumulative transportation impact if combined construction activities would result in potentially hazardous conditions or interfere with access for pedestrians, bicyclists, motorists, transit operations, and emergency vehicles. However, the proposed project and all cumulative projects, would be required to comply with the constraints of excavation permits and the Blue Book or local encroachment permit requirements. In addition, any projects that deviated from standard rules outlined in the Blue Book would require a Special Traffic Permit from the Transportation Agency. As part of the Special Traffic Permit process for capital projects, the Transportation Agency prepares traffic specifications that allow for defined lane reductions during certain hours, and the Transportation Agency would document any transit coordination that has been determined between the project(s) and Muni during design phase field meetings. Furthermore, the SFPUC would implement traffic control measures to reduce potential safety hazards associated with the project construction activities in accordance with its Standard Construction Measure 4 (Traffic). The measures would conform to the Blue Book and, in the event of lane closure, could include (but would not be limited to) installation of advanced detour signs to notify users regarding the detour. Therefore, because each cumulative project is required to comply with the same construction transportation regulations such as the Blue Book, Special Traffic Permit, excavation permit, encroachment permit, and to coordinate with the Transportation Agency, the cumulative construction impact would not be significant.

Operation of the cumulative projects could result in a significant cumulative transportation impact if combined activities were to result in potentially hazardous conditions or interfere with access for pedestrians, bicyclists, motorists, transit operations, and emergency vehicles. Because the Stonestown Development Project would result in significant unavoidable transit delays and the Parkmerced Project would generate substantial operational traffic having a significant effect on the transportation network, the cumulative effect on transportation conditions is potentially significant. However, the project operations would not result in new vehicle trips and would not contribute considerably to any potentially significant cumulative transportation impact. Cumulative impacts on transportation and circulation during operations would therefore be less than significant.

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## E.7 Noise

| Topics:                                                                                                                                                                                                                                                                                                           | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                | Not Applicable                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|--------------------------|-------------------------------------|
| <b>NOISE.</b> Would the project:                                                                                                                                                                                                                                                                                  |                                |                                                    |                              |                          |                                     |
| a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?                                                                 | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/>            |
| b) Generation of excessive groundborne vibration or groundborne noise levels?                                                                                                                                                                                                                                     | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/>            |
| c) For a project located within the vicinity of a private airstrip or an airport land use plan area or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The project site is not in the vicinity of a private airstrip or an airport land use plan area or in an area within 2 miles of a public airport or public use airport. Therefore, Topic E.7.c is not applicable to the project and is not discussed further.

Noise is generally defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, hotels, and residences are considered to be more sensitive to noise intrusion than are commercial or industrial activities. Because noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a proposed project. Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting, written as dBA and referred to as A-weighted decibels. There is a strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

With respect to how humans perceive and react to changes in noise levels, a 1 dBA increase is imperceptible, a 3 dBA increase is barely perceptible, a 5 dBA increase is clearly noticeable, and a 10 dBA increase is subjectively perceived as approximately twice as loud. These subjective reactions to changes in noise levels were developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broadband noise and to changes in levels of a given noise source. These statistical indicators are thought to be most applicable to noise levels in the range of 50 to 70 dBA, as this is the usual range of voice and interior noise levels. Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted through ordinary arithmetic. On the dB scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, their combined sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one source produces a sound pressure level of 70 dBA, two identical sources would combine to produce 73 dBA, and four identical sources would combine to produce 76 dBA. The combined sound level of any number of sources can be determined using decibel addition. Similarly, sound levels attenuate with distance at a non-linear rate. Localized sources, also called point sources or stationary sources, grouped closely together attenuate with distance at a rate of approximately 6 dB per doubling of distance.<sup>53</sup>

Vibration is the physical manifestation of energy carried through the earth and structures. Groundborne vibration consists of rapidly fluctuating motions or waves. It has the potential to annoy people and damage buildings. The most common descriptor used to quantify construction vibration amplitude in relation to impacts on structures is the peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec). The potential for sleep disturbance from vibration is measured by determining the vibration decibels (VdB) at the vibration receptor. Vibration decibels (VdB) is defined as vibration velocity in decibel scale. Vibration levels above 72 VdB have the potential to cause sleep disturbance.<sup>54</sup>

## Existing Noise and Vibration Sources and Noise Levels

The project area includes residential, schools, neighborhood commercial, and public open space uses and has noise sources characteristic of an urban setting. Dominant noise sources are vehicular traffic and Muni buses and trains from adjacent roadways such as Lake Merced Boulevard, Sloat Boulevard, 19th Avenue, Taraval Street, and Judah Street. The Muni L Taraval and N Judah light rail lines, both of which cross the project pipeline alignment, are an existing source of vibration. No other major sources of vibration are in the project vicinity.

As described in the noise and vibration project analysis (details are provided in **Appendix C**), long-term (24-hour) noise measurements were conducted by Vibro-Acoustic Consultants at four locations in the project area to characterize existing ambient noise levels.<sup>55</sup> The measurement locations were selected as representative of locations where the longest durations of construction close to sensitive receptors or where nighttime construction would occur. Noise measurements were taken on December 4, 2024. The results of the measurements are shown in **Table 8**. The locations of the noise measurements are shown in . Noise

53 Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment*. FTA Report No. 0123. Available: [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf). Accessed September 5, 2025.

54 Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment*. FTA Report No. 0123. Available: [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf). Accessed September 5, 2025.

55 Vibro-Acoustic Consultants, 2025, Noise and Vibration Results Memorandum - Westside Potable Emergency Firefighting Water System Project.

levels are expressed as  $L_{eq}$ , or equivalent continuous sound level, which is a measurement that represents the overall sound level of a fluctuating noise over a specific period. Noise levels are also reported as  $L_{dn}$ , the Day-Night Average Sound Level, which is a measure of the cumulative sound exposure a person experiences over a 24-hour period.  $L_{dn}$  is calculated as the average sound level during a 24-hour period, but with a 10 dB penalty added to the nighttime sound level (between 10 p.m. and 7 a.m.). This penalty accounts for the fact that people are generally more sensitive to noise during nighttime hours when background noise levels are lower.

**Table 8. Ambient Noise Levels**

| Measurement Location | Address                                                | Daytime, $L_{eq}$ (dBA) | Nighttime, $L_{eq}$ (dBA) | Day-Night Average, $L_{dn}$ (dBA) |
|----------------------|--------------------------------------------------------|-------------------------|---------------------------|-----------------------------------|
| <b>M1</b>            | Lake Merced Blvd – between Middlefield Dr & Winston Dr | 71                      | 65                        | 73                                |
| <b>M2</b>            | Sloat Blvd & 20th Ave                                  | 70                      | 61                        | 70                                |
| <b>M3</b>            | Taraval St & 42nd Ave                                  | 65                      | 58                        | 67                                |
| <b>M4</b>            | Judah St & 42nd Ave                                    | 66                      | 62                        | 69                                |

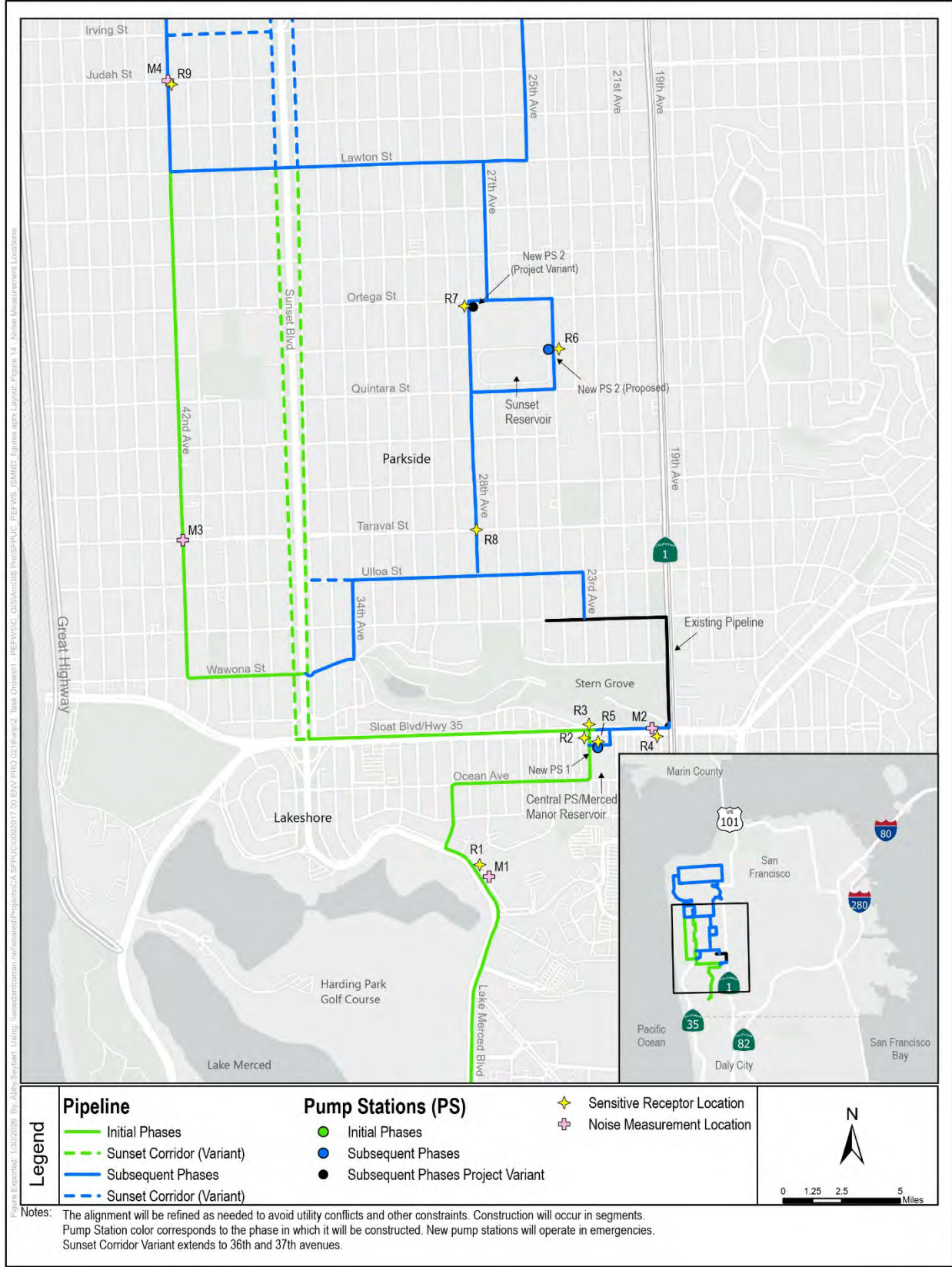
Note: For the purposes of calculating ambient  $L_{dn}$ , daytime hours are between 7 a.m. and 10 p.m., while nighttime hours are between 10 p.m. and 7 a.m. Source: Vibro-Acoustic Consultants 2025

## Noise-Sensitive Receptors

Noise-sensitive receptors generally include hospitals, skilled nursing/convalescent care facilities, schools, daycares, churches, libraries, and residences. The nearest noise sensitive receptors are residences, which occur along the proposed pipeline alignment with distances from the residential property line to the construction area as close as 15 feet. **Figure 14** shows the locations of representative receptors and locations where noise measurements were taken.



Figure 14: Noise Measurement Location and Representative Receptors (revised)



## Vibration-Sensitive Receptors

Receptors that are sensitive to vibration generally include structures (especially older masonry structures), older utilities, people (especially residents, the elderly, and the sick), and equipment (e.g., magnetic resonance imaging equipment and high-resolution lithographic, optical, and electron microscopes).<sup>56</sup> The primary vibration-sensitive receptors in the project area are structures that could be susceptible to damage, and people, who could be susceptible to vibration-related annoyance, particularly during nighttime hours. Project construction areas would be at least 15 feet from the nearest offsite structures, which are residences along the pipeline alignment. Table 9 shows the representative locations of receptors sensitive to noise and vibration that are located closest to project components.

**Table 9. Noise and Vibration Sensitive Receptors Closest to Project Components**

| Construction Activity <sup>1</sup>                         | Type of Sensitive Receptor | Location                                          | Minimum Distance from Project Area Boundaries <sup>3</sup> | Representative Ambient Measurement Location/ <sup>2</sup> | Day-Night Average, L <sub>dn</sub> (dBA) |
|------------------------------------------------------------|----------------------------|---------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------|
| <b>Soil Improvements</b>                                   | School                     | R1: 19 Lake Merced Boulevard (Lowell High School) | 50 feet                                                    | M1                                                        | 73                                       |
| <b>Vaults</b>                                              | Residence                  | R2: 701 Sloat Boulevard                           | 25 feet                                                    | M2                                                        | 70                                       |
| <b>Pipeline construction – open trench</b>                 | Residence                  | R3: 660 Sloat Boulevard                           | 20 feet                                                    | M2                                                        | 70                                       |
| <b>Pipeline construction open trench (longer duration)</b> | Residence                  | R4: 345 Sloat Boulevard                           | 110 feet                                                   | M2                                                        | 70                                       |
| <b>New pump station 1</b>                                  | Historic Structure         | R5: 2930 23rd Ave (Central Pump Station)          | 20 feet                                                    | M2                                                        | 70                                       |
| <b>New pump station 2</b>                                  | Residence                  | R6: 2006 24th Avenue                              | 50 feet                                                    | M2                                                        | 70                                       |
| <b>Pipeline construction – open trench</b>                 | Residence                  | R7: 1907 28th Avenue                              | 30 feet                                                    | M2                                                        | 70                                       |
| <b>Pipeline construction - trenchless</b>                  | Residence                  | R8: 1801 Taraval Street                           | 15 feet                                                    | M3                                                        | 67                                       |
| <b>Pipeline construction - trenchless</b>                  | Residence                  | R9: 3645 Judah Street                             | 15 feet                                                    | M4                                                        | 69                                       |

Notes: 1) Project components listed under the construction activity are not meant to be comprehensive of all activities at each location. For example, open trench pipeline construction would occur throughout the project area including at these locations.

2) Measurement location M2 is representative of ambient noise levels at residences along typical residential streets and of existing noise level at the Central Pump Station, which is in a residential neighborhood. Measurement location M3 is representative of a residential receptor in an area where trenchless construction and/or nighttime work, such as for crossings of Muni tracks, is proposed.

3) Distances shown here are for noise analysis and are calculated from the midpoint between the center of the street and parking lane to property line. The distance used for vibration calculations is from the edge of the sidewalk to the building façade and thus may be greater than the distance shown here.

56 Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment*. FTA Report No. 0123. Available: [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf). Accessed January 30, 2024.

**Impact NO-1: The proposed project could generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Less than Significant with Mitigation*)**

Construction noise is regulated by the San Francisco Police Code, article 29, sections 2907 and 2908. Police Code section 2907 requires that noise levels from individual pieces of construction equipment, other than impact tools, not exceed 80 dBA at 100 feet from the source. Impact tools are not subject to the equipment noise limit provided that impact tools and equipment would have intake and exhaust mufflers recommended by the manufacturers and are approved by the Director of Public Works or the Director of Building Inspection as best accomplishing maximum noise attenuation. Pavement breakers and jackhammers would also be equipped with acoustically attenuating shields or shrouds recommended by the manufacturers and approved by the Director of Public Works or the Director of Building Inspection as best accomplishing maximum noise attenuation. Police Code section 2908 prohibits construction work between 8 p.m. and 7 a.m., if noise would exceed the ambient noise level by 5 dBA at the project property line, unless a special permit is authorized by the Director of Public Works or the Director of Building Inspection. The project is required to comply with Police Code sections 2907 and 2908.

The construction noise analysis evaluates, using the FTA general construction assessment criterion (i.e., 90 dBA 1-hour  $L_{eq}$  at the nearest noise-sensitive receptor and 100 dBA at commercial/industrial receptors), the noise level resulting from simultaneous operation of the two loudest pieces of equipment and whether the noise level would be 10 dBA or greater above the ambient noise level at the locations of sensitive receptors. This criterion represents a reasonable worst-case noise level because it is based on the assumption that the two noisiest pieces of equipment would operate simultaneously. The planning department evaluates nighttime construction noise for its potential to result in sleep disturbance using two criteria: whether interior noise levels would exceed 45 dBA or whether construction noise would result in an increase of 5 dBA over existing nighttime noise levels at the nearest sensitive receptor. An exterior noise level of more than 60 dBA translates to an interior noise level above 45 dBA due to the attenuation provided by buildings. If any of these criteria are exceeded, the planning department evaluates the temporal frequency, duration, and intensity of the exceedance to determine whether construction noise could result in a substantial temporary increase in ambient noise levels.

**Construction Impacts (Daytime and Nighttime)**

The project would involve construction of new emergency pump stations at the Central Pump Station and Sunset Reservoir sites and construction of pipelines and associated appurtenances within existing city streets. The project would be designed and constructed in phases, with initial phases entailing construction of the pipeline from Lake Merced Pump Station to Central Pump Station/Merced Manor Reservoir facility and then to Lawton Street, as well as initial improvements at the Lake Merced Pump Station. Because the project would be constructed over approximately 15 years from 2026 through 2040, some of the locations for subsequent phases have not yet been designed and alternative concepts for pipelines and emergency pump station locations are still in development. Pipelines north of Sloat Boulevard that would be constructed later in the initial phase of construction and in subsequent phases thus include variants for both the western portion of the pipeline alignment and the location of the emergency pump station at the Sunset Reservoir. The analysis of noise impacts considers representative sensitive receptors and reflects noise impacts that would pertain to all of the potential variants for construction. The analysis is conservative and addresses impacts that would be associated with construction of the variant where construction would be closest to sensitive receptors. Some variants would have reduced noise impacts because construction areas could be

located further from homes. For example, trenchless construction of pipelines crossing Muni light rail lines on Taraval Street and Judah Street could be as close as 20 feet from homes if the crossings are constructed on 42nd Avenue but would be up to 140 feet from homes if the pipelines are constructed on Sunset Boulevard per the Sunset Boulevard corridor project variant.

Project construction would generally occur Monday through Friday, except holidays, between 7 a.m. and 5 p.m.; however, because the City of San Francisco allows construction between 7 a.m. and 8 p.m., seven days a week, weekend work from 7 a.m. to 5 p.m. could occur as necessary to meet critical project milestones. Limited nighttime work (defined 8 p.m. to 7 a.m. in the Police code for noise) could be required for boring activities associated with trenchless crossing under Muni light rail lines. Nighttime work at each Muni light rail crossing could require up to six nights of work. Nighttime or weekend construction work may also be needed to expedite the project construction schedule and would be undertaken in compliance with Section 2908 of the Noise Ordinance. **Figure 9** shows locations where nighttime construction might occur. Construction would require the use of heavy equipment. During each stage of a given construction phase, there would be a different mix of equipment. Construction activity noise levels at and near the project area would fluctuate depending on the type, number, and duration of use of the various pieces of construction equipment.

### Daytime Construction Noise

Construction of the project would temporarily generate noise. Noise levels associated with the construction equipment anticipated to be used during construction of the project are listed in **Table 10**. As shown in the table, some individual equipment noise levels would exceed the Police Code section 2907 construction noise limits of 80 dBA when measured at a distance of 100 feet. Although an impact pile driver and hoe ram would exceed noise levels of 80 dBA, impact tools with approved mufflers are exempt from the 80 dBA limit and as required by Standard Construction Measure 5 (Noise), SFPUC would ensure that approved mufflers are used on all impact equipment.

As shown in **Table 10**, the concrete saw would generate noise levels greater than 80 dBA at 100 feet. Concrete saws are used for relatively detailed short-term demolition work, such as removing concrete from an area of a street or sidewalk. Concrete cutting is a common activity performed for utility work throughout San Francisco. Concrete saw operations progress at a rate of approximately 8 feet per minute.<sup>57</sup> Thus, to cut both sides of a trench for a 250-foot block, a concrete saw would need to operate for approximately one hour. While a concrete saw could generate noise levels that exceed the standard established in the noise ordinance, the limited duration for which it affects a given sensitive receptor does not represent a substantial temporary increase in ambient noise. As shown in **Table 10**, the vibratory pile driver would generate noise levels greater than 80 dBA at 100 feet. Vibratory pile driving may be needed during construction of the vaults. However, such equipment is permitted under section 2907 of the Police Code, provided they are equipped with approved mufflers or acoustic shields.

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57 Black Diamond, *How Fast Can I Cut Through Concrete?*, May 3, 2019, <https://diamondkingtools.com/blog/how-fast-can-i-cut-through-concrete-feet-per-minute/> accessed August 3, 2025

**Table 10.** Typical Noise Levels from Loudest Construction Equipment

| Equipment                                    | Lmax @50 feet, dBA <sup>1</sup> | Lmax @100 feet, dBA | Exceeds Noise Ordinance? <sup>1</sup> |
|----------------------------------------------|---------------------------------|---------------------|---------------------------------------|
| Truck                                        | 76                              | 70                  | No                                    |
| Concrete Pump Truck                          | 82                              | 76                  | No                                    |
| Dump Truck                                   | 76                              | 70                  | No                                    |
| Concrete saw                                 | <b>90</b>                       | <b>84</b>           | <b>Yes</b>                            |
| Crane                                        | 81                              | 75                  | No                                    |
| Excavator                                    | 81                              | 75                  | No                                    |
| Pile Driver (impact) <sup>1</sup>            | <b>95</b>                       | <b>89</b>           | <b>Yes</b>                            |
| Pile Driver (vibratory)                      | <b>95</b>                       | <b>89</b>           | <b>Yes</b>                            |
| Front end loader                             | 80                              | 74                  | No                                    |
| Backhoe                                      | 80                              | 74                  | No                                    |
| Vacuum street sweeper                        | 82                              | 76                  | No                                    |
| Paver                                        | 85                              | 79                  | No                                    |
| Pneumatic tools (e.g. jackhammers)           | 85                              | 79                  | No                                    |
| Compactor (ground)                           | 82                              | 76                  | No                                    |
| Roller                                       | 85                              | 79                  | No                                    |
| Pumps                                        | 77                              | 71                  | No                                    |
| Compressor (air)                             | 80                              | 74                  | No                                    |
| Welder/Torch                                 | 74                              | 68                  | No                                    |
| Generator                                    | 82                              | 76                  | No                                    |
| Ventilation Fan                              | 79                              | 73                  | No                                    |
| Auger drill rig                              | 84                              | 78                  | No                                    |
| Grouting machine                             | 77                              | 71                  | No                                    |
| Concrete mixer truck                         | 79                              | 73                  | No                                    |
| Concrete Vibrator                            | 76                              | 70                  | No                                    |
| Scraper                                      | 85                              | 79                  | No                                    |
| Tractor                                      | 84                              | 78                  | No                                    |
| Man lift                                     | 75                              | 69                  | No                                    |
| Mounted impact hammer (hoe ram) <sup>1</sup> | <b>90</b>                       | <b>84</b>           | <b>Yes</b>                            |
| Grader                                       | 85                              | 79                  | No                                    |

Source: FTA Transit Noise and Vibration Impact Assessment Manual Table 7-1

<sup>1</sup> Exempt from the ordinance noise limit of 86 dBA at 50 feet or 80 dBA at 100 feet. Noise levels in **bold** exceed the noise ordinance section 2907(a) limit, but as indicated, two of the four exceedances are from equipment exempt from this limit provided impact tools are fitted with intake and exhaust mufflers and pavement breakers and jackhammers are fitted with recommended acoustically attenuating shields or shrouds.

Given that all construction equipment except the concrete saw and the vibratory pile driver would meet the limits specified in the noise ordinance for non-impact equipment and the limited duration of concrete saw and vibratory pile driver use, construction equipment would be expected to comply with the section 2907 standard. Therefore, construction equipment used for the project would not result in a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, and the impact would be less than significant.



The analysis below evaluates whether construction of each project component would generate a substantial temporary increase in ambient noise levels. This impact discussion is organized by project component as follows: 1) pump station improvements; 2) new pump stations; 3) pipelines and appurtenances by typical open trench methods; 4) vaults and the slower open trench construction at 19th Avenue and Sloat Boulevard); 5) soil improvements; and 6) trenchless pipeline installation. Project components that would have similar impacts are discussed together. Pipeline abandonment could involve excavation of access pits using equipment similar to open trench pipe construction and is thus not evaluated separately. Installation of small appurtenances such as hydrants, cabinets and sampling stations would occur concurrently with pipeline construction; because this work would not entail use of the noisiest types of equipment it is not discussed separately. Detailed information about project construction is presented in [Table 5](#) in Section A, Project Description.

## **Pump Stations**

### ***Lake Merced Pump Station***

Construction for the Lake Merced Pump Station upgrades would occur in the interior of the buildings and would not require heavy construction equipment. Therefore, limited construction noise impacts are anticipated, and noise impacts would be less than significant. Construction of pipelines via open trench methods at the pump station is discussed below under Pipelines, Open Trench Construction.

### ***Emergency Pump Stations 1 and 2***

Construction of the new emergency pump stations 1 and 2 would entail similar phases for each station and would include the following phases: mobilization; demolition; site preparation; grading and utilities work; construction of foundation; construction of the building; installation of pump and mechanical equipment; installation of electrical and instrumentation controls as well as startup, testing and commissioning; site restoration; and demobilization.

Demolition, excavation, and construction would cause a temporary increase in noise levels in the project vicinity. Construction equipment would generate noise that could be considered an annoyance by occupants of nearby properties and residents at the project site. The construction period would last approximately 2 to 2.5 years. Construction noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between noise source and affected receptor, and the presence (or absence) of barriers. Impacts would generally be limited to demolition and the periods during which new foundations and exterior structural and façade elements are constructed. Interior construction noise would be substantially reduced by exterior walls.

Heavy equipment such as excavators, dump trucks, pavers and vibratory rollers, would be used for demolition, site preparation, grading, foundations, and building construction. Overall, of the 2 to 2.5-year construction duration, the demolition, site preparation and grading, and foundation and shoring work would occur for approximately 5 to 6.5 months (see [Table 6](#)). Building construction would take an additional 5 to 6.25 months, but only a portion of the building construction work would occur outside, with finish work for the pump stations taking place inside the buildings. Additionally, construction noise levels would be temporary and would not persist upon completion of construction activities. Furthermore, in accordance with the noise ordinance, noise levels from individual pieces of construction equipment would not exceed 80 dBA at a distance of 100 feet from the source. Additionally, the construction of the pump station buildings

would not require the use of impact equipment. Therefore, construction noise impacts would be less than significant, and no mitigation is required.

## Pipelines

### *Open Trench Construction*

The proposed pipelines would primarily be installed using open-trench construction, advancing at 20 to 30 feet per day, with work at any single location lasting approximately two weeks (though not continuously) except for work near the intersection of 19th Avenue and Sloat Boulevard where a slower rate of construction (i.e. longer construction period) is anticipated due to site constraints. This segment of pipeline on Sloat Boulevard is analyzed in the next section below (Vault Construction and Slower Rate Open Trench). Open trench construction would occur during the daytime. The primary noise sources during trenching include concrete saws, backhoes, excavators, loaders, dump trucks and pavers. Most open-trench construction would use conventional equipment and would not require pile driving. Because the noise-producing equipment progresses along with trenching, excavation work would affect noise sensitive receptors for a relatively short period (approximately two weeks). Given the short duration of increased noise exposure at each receptor, daytime open-trench construction is not expected to result in a substantial temporary increase in ambient noise. Thus, daytime open-trench construction would have less-than-significant noise impacts.

### *Vault Construction and Slower Rate Open Trench*

This section evaluates construction of the following project components: 1) vault construction, which could take approximately 2 to 3 weeks at each location and would occur at various locations along the pipeline alignment; and 2) pipeline installation via open trench construction along Sloat Boulevard near 19th Avenue, which would proceed at a slower rate than typical open trench construction and could take approximately two months.

Construction of approximately 40 belowground concrete vaults would be required at intervals along the pipeline alignment, and would entail removing pavement and concrete, excavating the area needed for the buried vault, installing shoring and forms for the vault structure and then pouring concrete. Equipment used for vault construction would be the same as that used for open-trench construction and could include pile drivers where soil conditions require it.

Pipeline installation via open trench along Sloat Boulevard near 19th Avenue would be the same as described above under Open Trench Construction but could require as much as two months, as noted above. For representative sensitive receptors closest to these activities, noise levels were calculated assuming simultaneous operation of two of the loudest pieces of equipment for a scenario when pile driving would be required and were compared to two criteria: 1) exceedance of a 90-dBA noise level, or 2) a noise level of 10 dBA or more above the ambient noise level.

Table 11 shows noise levels for a scenario where pile driving may be required for construction of vaults in areas with certain soil conditions and for the slower open trench construction. As shown, daytime construction noise levels for vaults would exceed 90 dBA and would expose noise sensitive receptors to noise levels up 30 dBA above ambient noise levels. Pile driving for open trench construction would not exceed 90 dBA, but would exceed the 10 dBA over ambient noise level criterion by 2 dBA. Therefore, these activities would result in significant noise impacts and **Mitigation Measure M-NO-1a: Construction Noise Control**

would be required to reduce construction noise impacts in circumstances where pile driving would be needed for the slower rate open trench construction and for construction of the vaults.

However, for construction of the vaults where pile driving is not required, this activity would not result in construction as loud as vault construction that requires pile driving. This is because for vault construction with no required pile driving, the two loudest pieces of equipment would be a concrete saw and paver. However, these pieces of equipment would only be used for only short durations of the day and would not be used for the full 2-3 weeks of construction. Given the short duration of increased noise exposure at each receptor (2-3 weeks), daytime vault construction without pile driving would not result in a substantial temporary increase in ambient noise and this construction activity would have less-than-significant noise impact.

**Table 11. Daytime Noise Level for Vaults and Slower Rate Open Trench**

| Closest Representative Receptor       | Construction Activity | Two Loudest Pieces of Equipment Combinations | Estimated Duration     | Ambient Noise Level, $L_{eq}$ dBA | Distance to Property Line, Feet | Combined Level, $L_{eq}$ dBA | Daytime Criterion: Ambient ( $L_{eq}$ ) + 10 dBA | Impact: 90 dBA and/or Ambient + 10 dBA |
|---------------------------------------|-----------------------|----------------------------------------------|------------------------|-----------------------------------|---------------------------------|------------------------------|--------------------------------------------------|----------------------------------------|
| <b>Residence (R2, 701 Sloat Blvd)</b> | Vaults                | Pile driver (vibratory), Concrete saw        | 2 to 3 weeks per vault | 70                                | 15                              | <b>100</b>                   | 80                                               | <b>Yes</b>                             |
| <b>Residence (R4, 345 Sloat Blvd)</b> | Open-Trench           | Pile driver (vibratory) Concrete saw         | 2 months               | 70                                | 110                             | <b>82</b>                    | 80                                               | <b>Yes</b>                             |

Note: The noise levels presented in this table represent noise from the two loudest pieces of construction equipment that could be used simultaneously during the construction of a given project component, at the closest potential distance to a receptor, in both quiet and noisy ambient conditions. Any given receptor may be exposed to construction noise from more than project component (e.g., open-trench and pump station).

Implementation of **Mitigation Measure M-NO-1a: Construction Noise Control** would be required to reduce noise impacts to less-than-significant levels. **Mitigation Measure M-NO-1a** requires the SFPUC and its construction contractor to develop and implement feasible noise control measures during construction, considering site constraints, as documented in a noise reduction plan prepared by an acoustical engineer with input from the construction contractor. The construction noise control plan shall be developed with a performance target of reducing construction noise levels to below 90 dBA and 10 dBA above ambient noise levels at sensitive receptor locations. Measures in the construction noise plan would directly lessen construction noise levels and the durations of exceedances of these quantitative criteria through various methods including, but not limited to, the following: (1) placing a barrier between the sensitive receptor(s) and the noise sources; (2) use of best available noise control techniques; (3) locating noisy stationary equipment as far as possible from sensitive receptors; and (4) alternative methods of pile driving. For example, use of exhaust mufflers and noise jackets can reduce equipment noise by 10 dBA and effective noise barriers typically reduce noise levels by 5 to 10 dBA.<sup>58</sup> Additional measures include requirements to identify a construction noise manager, track and respond to complaints, and noise monitoring. **Mitigation Measure M-NO-1a** also requires notifying the public about construction activities and complaint procedures.

58 FHWA, Keeping the Noise Down, Highway Traffic Noise Barriers, February 2001.

These measures would serve to lessen construction noise increases and durations of exceedances of the quantitative criteria at sensitive receptor locations. Noise impacts would be less than significant with implementation of **Mitigation Measure M-NO-1a**.

#### **Mitigation Measure M-NO-1a: Construction Noise Control**

This measure applies to the following project construction activities:

- 1) vibratory pile driving within 170 feet of noise-sensitive receptors for a period of two weeks or longer;
- 2) use of impact pile driving for any duration of time;
- 3) all nighttime trenchless construction within 500 feet of noise-sensitive receptors;
- 4) all nighttime work that would occur for more than three consecutive nights or up to nine nights within a 90-day period within 500 feet of noise-sensitive receptors; and,
- 5) soil improvements within 50 feet of schools.

Prior to the start of construction of each phase of the project, the SFPUC shall submit a project-specific construction noise control plan to the ERO or the ERO's designee for approval if any of the above construction activities would occur. The construction noise control plan shall be prepared by a qualified acoustical engineer, with input from the construction contractor, and include all feasible measures to reduce construction noise. The construction noise control plan shall discuss the contractor's planned construction activities and identify noise control measures to meet a performance target of construction activities resulting in a noise level less than 90 dBA 1-hour Leq, 10 dBA above the ambient noise level, or an interior level of 45 dBA during nighttime hours at noise-sensitive receptors (residences, hospitals, convalescent homes, schools, churches, and hotels and motels); and daytime construction noise to a performance target of 100 dBA exterior noise level at commercial receptors. The SFPUC shall ensure that the requirement for the construction contractor to submit a noise control plan prepared by a qualified acoustical engineer is included in contract specifications along with the measures listed below.

Where nighttime construction is required, the plan shall include specific measures to reduce nighttime construction noise. The plan shall also include measures for notifying the public of construction activities, complaint procedures, and a plan for monitoring construction noise levels in the event complaints are received.

The construction noise control plan shall include the following measures to the degree feasible, or other effective measures (as determined by the ERO), to reduce construction noise levels:

- Use construction equipment that is in good working order, and inspect mufflers for proper functionality;
- Select "quiet" construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures);
- Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors;
- Prohibit the idling of inactive construction equipment for more than five minutes;

- Locate stationary noise sources (such as compressors) as far from nearby noise sensitive receptors as possible, muffle such noise sources, and construct barriers around such sources and/or the construction site.
- Avoid placing stationary noise-generating equipment (e.g., generators, compressors) within noise-sensitive buffer areas (as determined by the acoustical engineer) immediately adjacent to neighbors.
- Enclose or shield stationary noise sources from neighboring noise-sensitive properties with noise barriers to the extent feasible. To further reduce noise, locate stationary equipment in pit areas or excavated areas, if feasible; and
- Install temporary barriers, barrier-backed sound curtains and/or acoustical panels around working powered impact equipment and, if necessary, around the project site perimeter. When temporary barrier units are joined together, the mating surfaces shall be flush with each other. Gaps between barrier units, and between the bottom edge of the barrier panels and the ground, shall be closed with material that completely closes the gaps, and dense enough to attenuate noise. The temporary noise barriers in the analysis assumes a noise reduction of 15 dB.

The construction noise control plan shall include the following measures for notifying the public of construction activities, complaint procedures and monitoring of construction noise levels:

- Designation of an on-site construction noise manager for the project;
- Notification of neighboring noise sensitive receptors within 300 feet of the project construction area at least 30 days in advance of high-intensity noise-generating activities (e.g., pier drilling, pile driving, and other activities that may generate noise levels greater than 90 dBA at noise sensitive receptors or 100 dBA at commercial receptors) about the estimated duration of the activity;
- A sign posted on-site describing noise complaint procedures and a complaint hotline number that shall always be answered during construction;
- A procedure for notifying the planning department of any noise complaints within one week of receiving a complaint;
- A list of measures for responding to and tracking complaints pertaining to construction noise. Such measures may include the evaluation and implementation of additional noise controls at sensitive receptors; and
- Conduct noise monitoring (measurements) at the beginning of major construction phases (e.g., demolition, grading, excavation) and during high-intensity construction activities to determine the effectiveness of noise attenuation measures and, if necessary, implement additional noise control measures.

The construction noise control plan shall include the following additional measures during pile-driving activities:

- When pile driving is to occur within 260 feet of a noise-sensitive receptor, implement “quiet” pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving



duration [only if such measure is preferable to reduce impacts to sensitive receptors]) where feasible, in consideration of geotechnical and structural requirements and conditions;

- Properly fit impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer; and
- Conduct noise monitoring (measurements) before, during, and after the pile driving activity.

### ***Trenchless Construction***

To avoid disruption of certain roads and Muni light rail lines, trenchless construction techniques may be used at several locations (see [Figure 9](#)). Trenchless construction could conservatively take up to 11 weeks and entails construction of jacking and receiving shafts and then boring/tunneling between the two shafts, advancing pipe and welding the pipe segments together. Heavy construction equipment would be similar to that used for open trench construction but would also include an auger drill rig and crane.

Trenchless crossings would take place during the daytime including construction of the shafts, with limited exceptions of construction occurring at night (see Nighttime Construction Noise section below). Some pile driving may be needed to construct the receiving shafts depending on the soil conditions. Construction noise levels for the trenchless construction are analyzed to determine if this project component would exceed the 10 dBA above ambient and 90 dBA criteria because of the proximity to sensitive receptors and the potential for loud construction noise levels from the pile driving. [Table 12](#) shows that when the two loudest pieces of equipment are operating at the same time, daytime noise levels during trenchless construction would exceed the 90 dBA criterion and that noise levels would be more than 10 dBA above ambient noise levels by 21 dBA and 22 dBA respectively. The analysis for trenchless construction is conservative, for similar reasons to those described for the vault construction above in terms of the types of equipment operating concurrently and the limited duration of the use of the loudest equipment. In addition, the estimated timeline for construction of the trenchless crossing is conservative and activities occurring in the shaft would have some noise reduction due to the location of equipment below grade in the shaft.

**Table 12. Daytime Noise Level for Trenchless Construction**

| Closest Representative Receptor Type   | Two Loudest Pieces of Equipment Combinations | Estimated Duration            | Ambient Noise Level, $L_{eq}$ dBA | Distance to Property Line, Feet | Combined Level, $L_{eq}$ dBA | Daytime Criteria: Ambient ( $L_{eq}$ ) + 10 dBA | Impact: 90 dBA and/or Ambient + 10 dBA |
|----------------------------------------|----------------------------------------------|-------------------------------|-----------------------------------|---------------------------------|------------------------------|-------------------------------------------------|----------------------------------------|
| <b>Residence (R8, 1801 Taraval St)</b> | Pile driver (vibratory), Concrete saw        | 11 weeks at each intersection | 65                                | 20                              | <b>97</b>                    | 75                                              | <b>Yes</b>                             |
| <b>Residence (R9, 3645 Judah St)</b>   | Pile driver (vibratory), Concrete saw        | 11 weeks at each intersection | 66                                | 20                              | <b>97</b>                    | 76                                              | <b>Yes</b>                             |

Notes: The trenchless activities would last approximately 11 weeks predominantly constructed during the day. The noise levels presented in this table represent noise from the two loudest pieces of construction equipment that could be used simultaneously during the construction of a given project component, at the closest potential distance to a receptor, in both quiet and noisy ambient conditions. Any given receptor may be exposed to construction noise from more than one project component.

$L_{eq}$  = equivalent noise level

Because of the potential use of the pile driver resulting in construction noise levels over 90 dBA and exceeding ambient noise levels by more than 10 dBA and up to 32 dBA above ambient, **Mitigation Measure M-NO-1a: Construction Noise Control** would be required to reduce construction noise impacts.

As explained under the discussion of vault and slower rate open trench construction, implementation of **Mitigation Measure M-NO-1a** would require noise reduction actions that achieve a performance target if this project component requires pile driving during construction. With implementation of **Mitigation Measure M-NO-1a**, the expected duration and intensity of construction noise would be reduced to a less-than-significant level.

### ***Soil Improvements***

Soil improvements are needed at three areas along Lake Merced Boulevard where soils are subject to liquefaction and landside risks. Various methods for soil improvement are under consideration. Construction methods for these soil improvements could include compaction grouting, vibro-replacement stone columns, cement deep soil mixing, drilled micro-piles, or jet grouting up to 50 feet below grade. Compaction grouting uses a small diameter steel casing that is advanced through the area to be improved, and a stiff mortar-like grout is injected at high pressure to displace and compact the surrounding soils. Installation of vibro-replacement stone columns entails construction of dense concrete aggregate columns (stone columns) using a vibrator suspended from a crane that pushes stones into the soil. Cement deep soil mixing uses mechanical mixing tools to shear the soil below grade and mix it with a cementitious slurry pumped at low pressure, creating soil mix columns. Drilled micro-piles use casing that is advanced to the design depth using a drilling technique. In addition, construction of belowground retaining structures such as secant pile walls or slope-stabilizing drilled piers up to 50 feet below grade may be required along the western edge of Lake Merced Boulevard at several locations to address landslide potential and prevent movement of the pipeline during an earthquake. None of the potential techniques includes pile driving for construction of these soil improvements. As stated above, this work may include using drilled micro-piles; however, those piles are not particularly noise generating (because they are drilled instead of driven using an impact pile driver).

Table 13 shows that noise from soil improvements could exceed both the 90-dBA and 10-dBA-over-ambient criteria. Specifically, the project construction could be 22 dBA above ambient within 85 feet of sensitive receptors represented by R1 (Lowell High School).

Construction of soil improvements would proceed at a rate of approximately 25 to 175 feet per month and could take up to approximately 3 to 9 months per segment, depending on the length of the improvement and the number of persons working at one time. Sensitive receptors along this area of improvement include Lowell High School and Lakeshore Elementary. These receptors would be exposed to temporary construction noise levels. The construction activities would be moving along the alignment and would only be within 85 feet of Lowell High School for a shorter duration of one to three months and all other receptors would be further away than 85 feet.

Similar to vault construction described above, the analysis for soil improvement construction is conservative in terms of the types of equipment operating concurrently and the limited duration of the use of the loudest equipment. Specifically, the drill rig, which could be operating for longer durations, would result in lower noise levels. However, because daytime construction noise levels have the potential to exceed 90 dBA and to exceed ambient noise levels by more than 10 dBA; thus, **Mitigation Measure M-NO-1a: Construction Noise Control** would be required to reduce construction noise impacts.

**Table 13. Daytime Noise Level for Soil Improvements**

| Closest Representative Receptor type         | Construction Activity | Two Loudest Pieces of Equipment Combinations | Estimated Duration        | Ambient Noise Level, $L_{eq}$ dBA | Distance to Property Line, Feet | Combined Level, $L_{eq}$ dBA | Daytime Criteria: Ambient ( $L_{eq}$ ) + 10 dBA | Impact: 90 dBA and/or Ambient + 10 dBA |
|----------------------------------------------|-----------------------|----------------------------------------------|---------------------------|-----------------------------------|---------------------------------|------------------------------|-------------------------------------------------|----------------------------------------|
| <b>School (R1, 19 Lake Merced Boulevard)</b> | Soil Improvements     | Concrete mixer, Concrete saw                 | 3 to 9 months per segment | 71                                | 20                              | <b>93</b>                    | 81                                              | <b>Yes</b>                             |

As explained under the discussion of vault and slower rate open trench construction, implementation of **Mitigation Measure M-NO-1a** would require noise reduction actions that achieve a performance target. With implementation of **Mitigation Measure M-NO-1a**, the expected duration and intensity of construction noise would be reduced to a less-than-significant level.

## Nighttime Construction Noise

### Trenchless Construction

As described above, to avoid disruption of certain roads and Muni light rail lines, trenchless construction techniques may be used at several locations (see [Figure 9](#)) and while most, if not all, of the work for trenchless crossings would take place during the daytime, up to approximately 6 nights of nighttime work could be required for boring activities associated with the trenchless crossings under Muni light rail lines (L Taraval and N Judah). [Table 14](#) shows various combinations of equipment that could be used during nighttime trenchless construction, and demonstrates that noise levels would exceed an exterior noise level of 60 dBA by up to 28 dBA, and would be more than 5 dBA above the ambient noise level. This impact would be potentially significant. Because nighttime construction noise levels would be over 60 dBA and would exceed ambient noise levels by more than 5 dBA, **Mitigation Measure M-NO-1a: Construction Noise Control** would be required to reduce construction noise impacts.

For the reasons explained under the discussion of vault and slower rate open trench construction, implementation of **Mitigation Measure M-NO-1a** would reduce noise impacts to less-than-significant levels. Nighttime trenchless construction noise impacts would be less than significant with mitigation.

## Summary of Construction Noise

Most project construction noise would affect sensitive receptors for only limited durations of time because work would be continually moving along the project alignments and would not occur at night. Therefore, most project construction noise would not represent a substantial temporary increase in ambient noise and would be less than significant. However, construction noise impacts of some project components either would occur for longer periods of time, would be substantially louder, would include pile driving or nighttime construction. Noise impacts for these construction activities would be significant. To reduce noise impacts experienced by nearby residents and other noise-sensitive receptors, the SFPUC would implement **Mitigation Measure M-NO-1a: Construction Noise Control**, which would reduce noise impacts to less-than-significant levels with mitigation.

**Table 14. Nighttime Noise Level for Trenchless Construction at Nearest Representative Receptor**

| Construction Activity       | Two Loudest Pieces of Equipment   | Ambient Nighttime Noise Level, $L_{eq}$ dBA | Distance to Sensitive Receptor (feet) | Combined Level, $L_{eq}$ dBA | Nighttime Criterion: Ambient ( $L_{eq}$ ) + 5 dBA | Exceeds Ambient + 5 dBA and/or 60 dBA Exterior Noise Level |
|-----------------------------|-----------------------------------|---------------------------------------------|---------------------------------------|------------------------------|---------------------------------------------------|------------------------------------------------------------|
| <b>Trenchless [Mining]</b>  | Auger drill rig, grouting machine | 62                                          | 20                                    | <b>85</b>                    | 67                                                | <b>Yes</b>                                                 |
| <b>Trenchless [Mining]</b>  | Crane, generator                  | 62                                          | 20                                    | <b>88</b>                    | 67                                                | <b>Yes</b>                                                 |
| <b>Trenchless [Mining]</b>  | Dump truck, crane                 | 62                                          | 20                                    | <b>84</b>                    | 67                                                | <b>Yes</b>                                                 |
| <b>Trenchless [Welding]</b> | 2 welders                         | 62                                          | 20                                    | <b>78</b>                    | 67                                                | <b>Yes</b>                                                 |
| <b>Trenchless [Welding]</b> | Welder, man lift                  | 62                                          | 20                                    | <b>79</b>                    | 67                                                | <b>Yes</b>                                                 |

Notes: The nearest representative receptor is 3645 Judah Street. Up to approximately 6 nights of work may occur at certain trenchless crossing locations. Different construction activities such as mining or welding with different combinations of equipment may occur as listed here for part of the work duration.

$L_{eq}$  = equivalent noise level

## Operation Impacts

### *Pipelines and Appurtenances*

Operation of underground pipelines would not generate noise. The appurtenances associated with the pipeline infrastructure include aboveground cabinet sets, hydrants and sampling stations, and belowground valve vaults, none of which generate operational noise. The pipeline infrastructure and the appurtenances require only periodic maintenance, which would generate an insignificant amount of noise. Maintenance activities would be similar to those that are already occurring for the existing pipeline system and would not increase ambient noise levels and therefore operational impacts would be less than significant.

### *Lake Merced Pump Station*

Operational noise resulting from the Lake Merced Pump Station project component includes the operation of a generator, which would be installed inside an existing building and would undergo monthly 15-minute tests and two full-load tests per year lasting approximately four hours. The generator testing would be done during the daytime. This is similar to the existing schedule for maintenance of generators at the Lake Merced Pump Station. The new 2.5-megawatt backup generator would be operated along with three existing backup generators (two 2.5-megawatt and one 375-kilowatt). Adding one 2.5-megawatt backup generator would not cause a significant increase in noise level even with the existing generators operating because combined noise levels from four generators would not be substantially louder than three generators. Assuming noise level from a generator is 82 dBA at 50 feet (see Table 10), the three existing generators would produce 87 dBA at 50 feet when operating together and adding a fourth generator would increase the noise level to 88 dBA at 50 feet,<sup>59</sup> which is an imperceptible change. Furthermore, the nearest residential receptors are at least 300 feet from Lake Merced Pump Station and noise levels from point sources attenuate greatly with distance. Also note that the generators would be enclosed within a building, which would further reduce noise levels

59 Formula:  $\Delta L = 10 \times \log n$ , where  $\Delta L$  = noise level difference;  $n$  = number of equally loud sound sources. As explained in the third paragraph of the Noise section of this document, on the dB scale, a doubling of sound energy corresponds to a 3 dB increase.

below those stated here. There would be no other new noise-generating mechanical equipment installed at the Lake Merced Pump Station. Noise impacts from normal operations would thus be less than significant.

### ***Emergency Pump Stations 1 and 2***

Construction of the new emergency pump stations 1 and 2 would include the installation of diesel pumps that would be exercised monthly for an hour. All maintenance activities would be conducted during the daytime. The diesel pumps at emergency pump stations 1 and 2 would be enclosed inside the buildings. Given the infrequent nature of regular testing and the pumps' locations enclosed within the buildings, the pump and generator noise would be minimal. In addition, the operational and maintenance activities of the two new emergency pump stations would not require additional staff specific to this project, nor would they result in a change to traffic volumes because maintenance would be conducted by staff who already perform maintenance for the existing pipelines and pump stations.

The pump stations would have fixed mechanical equipment including ventilation systems such as exhaust fans and air conditioning units that would generate noise. Depending on the size and operational conditions, air conditioning and ventilation equipment and exhaust fans can produce noise levels in the range of 70-75 dBA at a distance of 50 feet. Stationary noise sources would be required to comply with San Francisco Police Code section 2909. Section 2909 (b) specifically prohibits fixed mechanical equipment noise in excess of 8 dBA above the ambient noise level at the property plane and Section 2909 (d) prohibits fixed mechanical equipment from exceeding an interior noise limit at the nearest sensitive receptor of 45 dBA at night or 55 dBA during the day measured from any bedroom or living room. Ambient noise levels at various locations across the project range from 65 to 71 dBA during the daytime and 58 to 65 dBA during the nighttime. Adding multiple exterior mechanical equipment could potentially exceed the Police Code noise limits.

Implementation of **Mitigation Measure M-NO-1b: Operational Noise Analysis and Attenuation of Stationary Noise Sources** would be required to reduce noise impacts to less-than-significant levels.

**Mitigation Measure M-NO-1b** requires the SFPUC to include measures in the design of air conditioning and ventilation equipment to ensure that the noise levels would comply with San Francisco Police Code section 2909. Design measures could include siting of equipment to maximize distance to nearby residential receptors and using mufflers or shielding equipment. Operational noise impacts would be less than significant with implementation of **Mitigation Measure M-NO-1b**.

#### **Mitigation Measure M-NO-1b: Operational Noise Analysis and Attenuation of Stationary Noise Sources**

This measure applies to installation of noise-generating activities or equipment (heating, ventilation, and air conditioning equipment including exhaust fans) at emergency pump stations 1 and 2.

Prior to construction at new emergency pump stations 1 and 2, the SFPUC shall submit documentation to the Environmental Review Office (ERO) or the ERO's designee, demonstrating with reasonable certainty that the proposed design of the heating, ventilation, and air conditioning equipment meets the noise limits specified in section 2909 of the San Francisco Police Code (i.e., an 8 dB increase above the ambient noise level at the property plane for noise from commercial or industrial uses and interior noise limits of 55 dBA and 45 dBA for daytime and nighttime hours inside any sleeping or living room in a nearby dwelling unit on a residential property assuming windows open, respectively). The analysis shall be prepared by persons qualified in acoustical analysis and/or engineering. All recommendations from the acoustical analysis necessary to ensure that noise



sources would meet applicable requirements of the noise ordinance and/or not result in substantial increases in ambient noise levels shall be incorporated into the building design and operations. Acoustical treatments required to meet the noise limits in the San Francisco Police Code may include but are not limited to:

- Enclosing noise-generating mechanical equipment;
- Installing relatively quiet models of air handlers, exhaust fans, and other mechanical equipment;
- Using mufflers or silencers on equipment exhaust fans;
- Orienting or shielding equipment to protect noise sensitive receptors (residences, hospitals, convalescent homes, schools, churches, hotels and motels, and sensitive wildlife habitat) to the greatest extent feasible;
- Increasing the distance between noise-generating equipment and noise-sensitive receptors; and/or
- Placing barriers around the equipment to reduce noise.

**Impact NO-2: The proposed project would not generate excessive groundborne vibration or groundborne noise levels. (*Less than Significant with Mitigation*)**

Construction-related vibration can potentially impact nearby buildings or structures or, if occurring during nighttime hours, can result in sleep disturbance. This impact is analyzed further below, including any potential impacts on nearby historic structures in the project vicinity. While construction vibration can also impact vibration-sensitive equipment, there are no hospitals near the project site that may contain vibration sensitive equipment, such as magnetic resonance imaging equipment or high-resolution lithographic, optical, or electron microscopes. As such, the project would not cause vibration that would affect vibration-sensitive equipment and such potential impacts are not considered in the following analysis. Once construction is complete, the project would not involve the use of heavy machinery that is often associated with large commercial or industrial uses. Therefore, no sources of operational vibration are anticipated as part of the project.

### **Vibration Levels**

The primary vibration-sensitive receptors in the project area would be existing structures, which could be susceptible to damage, and people, who could be susceptible to vibration-related annoyance, particularly during nighttime hours. As discussed in Section A, Project Description, project construction would require the use of various types of heavy construction equipment, all of which would generate varying levels of groundborne vibration. Groundborne vibration decreases in intensity quickly with increased distance from the source. Typical vibration levels at various distances for relevant heavy construction equipment (i.e. those generating the greatest level of vibration) were calculated using the Federal Transit Administration's guidance on calculating vibration at a given distance from a reference value, and are shown in [Table 15](#).

### **Applicable Vibration Standards**

The FTA Manual provides guidance for evaluating vibration impacts from construction, including prediction methods, assessment procedures, and impact criteria. Vibration levels attenuate with distance from the source in a similar fashion to noise levels; however, because propagation of the vibration wave occurs through the ground, soil is an important factor in determining how efficiently vibration travels over a distance.

Results from the vibration analysis above are compared to the Caltrans criteria for potential damage to structures.<sup>60</sup> The most frequently used method to describe vibration impacts on buildings is peak particle velocity (PPV).<sup>61</sup> As shown in Table 16, the Caltrans guidelines for assessing vibration damage potential to various types of buildings range from 0.08 to 0.12 inch per second PPV for extremely fragile historic buildings, ruins, and ancient monuments to 0.50 to 2.0 inch per second PPV for modern industrial/commercial buildings.

**Table 15. Vibration Source Levels for Construction Equipment**

| Equipment                                                                                       | PPV at 25 feet<br>(reference<br>value) | PPV at 15<br>feet | PPV at 20 feet | PPV at 30 feet | PPV at 50 feet | PPV at 110 feet |
|-------------------------------------------------------------------------------------------------|----------------------------------------|-------------------|----------------|----------------|----------------|-----------------|
| <b>Vibratory roller<br/>(12-ton)<sup>1</sup></b>                                                | 0.067                                  | 0.118             | 0.086          | 0.055          | 0.031          | 0.013           |
| <b>Vibratory roller<br/>(Highway-Class Size )</b>                                               | 0.210                                  | 0.368             | 0.268          | 0.172          | 0.098          | 0.041           |
| <b>Vibratory pile driver</b>                                                                    | 0.170                                  | 0.298             | 0.217          | 0.139          | 0.079          | 0.033           |
| <b>Hoe Ram</b>                                                                                  | 0.089                                  | 0.156             | 0.114          | 0.073          | 0.042          | 0.017           |
| <b>Large Bulldozer/<br/>Excavator/Loader/<br/>Backhoe (&gt;20,000 lb.<br/>Operating Weight)</b> | 0.089                                  | 0.156             | 0.114          | 0.073          | 0.042          | 0.017           |
| <b>Drill rig</b>                                                                                | 0.089                                  | 0.156             | 0.114          | 0.073          | 0.042          | 0.017           |
| <b>Jackhammer</b>                                                                               | 0.035                                  | 0.061             | 0.045          | 0.035          | 0.016          | 0.007           |

Note: <sup>1</sup> FTA does not explicitly provide the size (tonnage) of the vibratory roller. The FTA analyzed highway class sized vibratory rollers than can range in size from 15-20 tons. The reference vibration level for a 12-ton vibratory roller, which is applicable to this project was obtained from the data provided in Technical Memorandum for the PG&E Power Asset Acquisition Project. (San Francisco Planning Department case no. 2023-005370ENV) Sources: California Department of Transportation, Transportation and Construction Vibration guidance Manual (September 2020). Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment*. FTA Report No. 0123. Available: [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf). Accessed September 5, 2025.

60 California Department of Transportation, Transportation and Construction Vibration guidance Manual (September 2020). Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment*. FTA Report No. 0123. Available: [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123\\_0.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf). Accessed September 5, 2025.

61 The maximum rate or velocity of particle movement is the commonly accepted descriptor of the vibration “strength.” This is referred to as the peak particle velocity and typically is measured in inches per second.

**Table 16. Vibration Thresholds for Structural Impacts—Damage**

| Structure and Conditions                                              | Maximum Peak Particle Velocity<br>(inches/second)<br>Transient Sources | Maximum Peak Particle Velocity<br>(inches/second)<br>Continuous or Frequent<br>Intermittent Sources |
|-----------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Extremely fragile historic buildings, ruins, ancient monuments</b> | 0.12                                                                   | 0.08                                                                                                |
| <b>Fragile buildings</b>                                              | 0.2                                                                    | 0.1                                                                                                 |
| <b>Historic and some old buildings</b>                                | 0.5                                                                    | <b>0.25</b>                                                                                         |
| <b>Older residential structures</b>                                   | 0.5                                                                    | <b>0.3</b>                                                                                          |
| <b>New residential structures</b>                                     | 1.0                                                                    | 0.5                                                                                                 |
| <b>Modern industrial/commercial buildings</b>                         | 2.0                                                                    | 0.5                                                                                                 |

SOURCE: California Department of Transportation. 2020 (April). *Transportation and Construction Vibration Guidance Manual*.

NOTES: Transient sources would create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include would impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Thresholds for historic and older residential structures are shown in **bold** as they are the types of structures near the project and are the focus of this analysis.

Based on the damage thresholds presented in **Table 16** and the primary building types along the project alignment, which are generally older residential structures and/or historic buildings, the analysis focuses on structure damage thresholds of 0.3 in/sec PPV and 0.25 in/sec PPV, respectively. **Table 17** shows the minimum setback distance that would be required for specific types of equipment to ensure that damage to structures would be avoided to these types of structures.

**Table 17. Minimum Equipment Setback Distance to Avoid Structural Damage**

| Equipment                                                             | Reference PPV at 25 feet | Minimum Setback Distance to Historic Buildings - 0.25 in/sec PPV (continuous) | Minimum Setback Distance to Older Residential Buildings (typ.) - 0.3 in/sec PPV (continuous) |
|-----------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Vibratory Pile Driver                                                 | 0.170                    | 18 feet                                                                       | 15 feet                                                                                      |
| Vibratory Roller (12-ton)                                             | 0.067                    | 8 feet                                                                        | 7 feet                                                                                       |
| Vibratory Roller (highway class size)                                 | 0.210                    | 22 feet                                                                       | 19 feet                                                                                      |
| Hoe Ram                                                               | 0.089                    | 10 feet                                                                       | 9 feet                                                                                       |
| Large Bulldozer/Excavator/Loader/Backhoe (>20,000lb Operating Weight) | 0.089                    | 10 feet                                                                       | 9 feet                                                                                       |
| Drill Rig                                                             | 0.089                    | 10 feet                                                                       | 9 feet                                                                                       |

SOURCE: California Department of Transportation. 2020 (April). *Transportation and Construction Vibration Guidance Manual*, Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)

## Construction

### Structural Damage

#### Pipeline Open Trench Construction

The most vibration-intensive type of construction equipment would be the vibratory pile driver, which would only be used where soil conditions require. In addition, the vibratory roller, which would be used during repaving at the completion of all open trench construction and pipeline installation, could generate substantial groundborne vibration. The project area is surrounded by residential land uses. The nearest structures are residences along much of the project pipeline alignment, which are approximately 15 feet from the construction area and most of which are over 45 years old. Because of the age of many of the adjacent residences, the “older residential structures” criterion is used for construction adjacent to residences. As shown in Table 15, the 12-ton vibratory roller used by the SFPUC would generate a peak particle velocity of 0.118 inches per second (in/sec) and the hoe ram, excavator/bulldozer, and drill rig would generate a peak particle velocity of 0.156 in/sec at a distance of 15 feet, all of which are below the Caltrans damage criteria for “older residential structures” (peak particle velocity of 0.30 in/sec).<sup>62</sup> However, as shown in Table 15, use of a vibratory pile driver occurring closer than 15 feet from older residences could result in vibration levels in excess of the applicable vibration criterion. This would be a potentially significant impact. Because vibration levels would exceed damage thresholds if a vibratory pile driver were used within 15 feet of an older residence, **Mitigation Measure M-NO-2: Vibration Reduction during Construction** would be required to reduce vibration impacts.

Implementation of **Mitigation Measure M-NO-2: Vibration Reduction during Construction** requires the SFPUC and its construction contractor to develop and implement vibration control measures during construction, considering site constraints when using a vibratory pile driver. Measures would include, but would not be limited to, use of smaller pieces of equipment, maintenance of setback distances, and use of alternative equipment and methods. SFPUC would conduct pre-construction surveys and monitor vibration levels. With implementation of **Mitigation Measure M-NO-2** vibration impacts associated with potential structural damage would be less than significant.

#### **Mitigation Measure M-NO-2: Vibration Reduction during Construction**

Prior to the start of construction for each phase of the project, the SFPUC shall complete a screening-level analysis comparing vibration levels for various pieces of equipment with the distance to adjacent buildings or structures. If the minimum equipment setback distances for the use of vibratory equipment in the table below can be met and groundborne vibration would not result in building damage or sleep disturbance, then a Vibration Management and Monitoring Plan does not need to be prepared, and the remainder of this measure is not applicable. The screening-level analysis shall be submitted to the ERO or the ERO’s designee for approval. The construction contract specifications shall require contractors to avoid use of vibratory equipment within the following setback distances from buildings as well as during any nighttime trenchless construction within 80 feet of residential structures.

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62 California Department of Transportation, 2020.

However, if vibratory equipment must be used within the vibration minimum setback distances or nighttime work must occur within the vibration setback distances noted below, then a Vibration Management and Monitoring Plan shall be required as described below.

Vibration Minimum Setback Distances –

| Equipment                                                             | Reference PPV at 25 feet | Minimum Setback Distance to Historic Buildings - 0.25 in/sec PPV (continuous) | Minimum Setback Distance to Older Buildings (typ.) - 0.3 in/sec PPV (continuous) |
|-----------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Vibratory Pile Driver                                                 | 0.170                    | 18 feet                                                                       | 15 feet                                                                          |
| Vibratory Roller (highway class size) <sup>1</sup>                    | 0.210                    | 22 feet                                                                       | 19 feet                                                                          |
| Vibratory Roller (12-ton) <sup>2</sup>                                | 0.067                    | 8 feet                                                                        | 7 feet                                                                           |
| Hoe Ram                                                               | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |
| Large Bulldozer/Excavator/Loader/Backhoe (>20,000lb Operating Weight) | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |
| Drill Rig                                                             | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |

<sup>1</sup> Source: California Department of Transportation, Transportation and Construction Vibration guidance Manual (September 2020); Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)

<sup>2</sup> Source: Noise Technical Memorandum – PG&E Power Asset Acquisition Project, “Calculation of peak particle velocity using a 12-ton Roller” (2025)

Vibration Management and Monitoring Plan –

Prior to construction, the SFPUC shall submit a project-specific Vibration Management and Monitoring Plan to the ERO or the ERO’s designee for approval if required per above. The plan shall identify all feasible means to avoid damage to potentially affected buildings. The Vibration Management and Monitoring Plan shall be prepared by a qualified vibration engineer, with input from the construction contractor, and the contract specifications shall include the requirement for this plan, as necessary, along with the measures below.

The Vibration Management and Monitoring Plan shall include, at a minimum, the following components, as applicable:

- **Pre-construction Survey** – Prior to the start of ground-disturbing activity, the SFPUC or its contractor shall engage a consultant to undertake a pre-construction survey of potentially affected buildings where vibratory equipment must be used at and within the vibration minimum setback distances and shall document existing damage, such as cracks and loose or damaged features (as allowed by property owners). The survey shall be done by a qualified professional (e.g. a licensed engineer or acoustical consultant) who shall document and photograph the existing conditions of the potentially affected buildings and/or structures. The SFPUC shall submit the survey to the ERO or the officer’s designee for review and approval prior to the start of vibration-generating construction activity.

If nearby affected buildings are designated as historic, the survey shall additionally include descriptions and photograph of all designated historic buildings (such as the existing Central Pump Station) prepared by a qualified historic preservation professional including all facades,



roofs, and details of the character-defining features that could be damaged during construction, and shall document existing damage, such as cracks and loose or damaged features (as allowed by property owners). The report shall also include pre-construction drawings that record the pre-construction condition of the buildings and identify cracks and other features to be monitored during construction. The qualified historic preservation professional shall be the lead author of the pre-construction survey if historic buildings and/or structures could be affected by the project. The SFPUC shall submit the survey for review and approval prior to the start of vibration-generating construction activity.

- **Maximum Vibration Level.** Based on the anticipated construction and condition of the affected buildings and/or structures on adjacent properties, a qualified acoustical/vibration consultant in coordination with a structural engineer (or professional with similar qualifications) and, in the case of potentially affected historic buildings/structures, a qualified historic preservation professional, shall establish a maximum vibration level that shall not be exceeded at each building/structure on adjacent properties, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (common standards are a peak particle velocity [PPV] of 0.25 inch per second for historic and some old buildings, a PPV of 0.3 inch per second for older residential structures, and a PPV of 0.5 inch per second for new residential structures and modern industrial/commercial buildings).
- **Vibration-generating Equipment.** The plan shall identify all vibration-generating equipment to be used during construction at applicable locations and identify potential alternative equipment and techniques that could be implemented if construction vibration levels are observed to meet or exceed the established criterion based on soil conditions. Such methods may include one or more of the following:
  - o Use a smaller 12-ton or 8-ton roller, a vibratory roller with reduced vibration amplitude settings, or hand-held “jumping jack” compactor
  - o Incorporate non vibratory pile driving shoring methods (i.e., trench boxes) and/or “quiet” pile-driving technologies into project construction (such as pre-drilled shafts drilled shafts, hydraulic pile driving methods, sonic pile drivers, auger cast-in-place, variable speed vibratory, micro-piling, or drilled-displacement), as feasible; and/or as needed to meet established criteria.
  - o Ensure appropriate excavation shoring methods to prevent the movement of adjacent structures.
- **Alternative Construction Equipment and Techniques.** The plan shall identify potential alternative equipment and techniques that could be implemented if construction vibration levels are observed in excess of the established standard (e.g., drilled shafts [caissons] could be substituted for driven piles, if feasible, based on soil conditions, or smaller, lighter equipment could be used in some cases).
- **Pile Driving Requirements.** If pile driving is deemed necessary, the SFPUC shall incorporate into construction specifications for the project a requirement that the construction contractor(s) use all feasible means to avoid or reduce damage to potentially affected buildings. Such methods may include one or more of the following:

- o Incorporate non vibratory shoring methods and/or “quiet” pile-driving technologies into project construction (such as pre-drilled shafts drilled shafts, hydraulic pile driving methods, sonic pile drivers, auger cast-in-place, variable speed vibratory, micro-piling, or drilled displacement), as feasible; and/or as needed to meet established criteria.
  - o Ensure appropriate excavation shoring methods to prevent the movement of adjacent structures.
- Vibration Monitoring. The plan shall identify the method and equipment for vibration monitoring to ensure that construction vibration levels do not exceed the established standards identified in the plan.
  - o Should construction vibration levels be observed to meet or exceed the criteria established in the plan, the contractor(s) shall halt the vibration-generating construction activity causing the exceedance and put alternative construction techniques identified in the plan into practice.
  - o If vibration has damaged nearby buildings and/or structures that are not historic, a qualified professional shall prepare a damage report documenting the features of the building and/or structure that has been damaged.
  - o If vibration has damaged nearby buildings and/or structures that are historic, the historic preservation consultant shall immediately notify the ERO and prepare a damage report documenting the features of the building and/or structure that has been damaged.
- Repair Damage. The plan shall also identify provisions to be followed should damage to any building and/or structure occur due to construction-related vibration. The building(s) and/or structure(s) shall be remediated by SFPUC to their pre-construction condition (as allowed by property owners) at the conclusion of vibration-generating activity on the site and, for historical buildings, remediated in compliance with Secretary of the Interior’s Standards for the Treatment of Historic Properties, in consultation with the qualified historic preservation professional and planning department preservation staff.
- Vibration Monitoring Results Report. After construction is complete, SFPUC shall submit to the ERO or the ERO’s designee a final report documenting the monitoring records, building and/or structure condition summaries, descriptions of all instances of vibration level exceedance, identification of damage incurred due to vibration, and corrective actions taken to restore damaged buildings and structures.

### Pipeline Trenchless Construction

Vibratory rollers would be used during repaving following trenchless construction activities. Similar to open trench construction, work would also occur within about 15 feet of older residential structures. Use of a generic highway-class size vibratory roller occurring closer than 20 feet from older residences could result in vibration levels in excess of the applicable criterion, while use of a 12-ton vibratory roller occurring closer than 7 feet from older residences could result in vibration levels in excess of applicable criterion (see [Table 15](#)). This would be a potentially significant impact. **Mitigation Measure M-NO-2: Vibration Reduction during Construction** would be required to reduce vibration impacts, and for the reasons discussed above, would reduce impacts to less-than-significant levels.

## Lake Merced Pump Station

No equipment that generates substantial groundborne vibration would be used during installation of the new emergency generator at the Lake Merced Pump Station. As a result, potential vibration impacts at this location would be less than significant.

## Emergency Pump Stations 1 and 2

A vibratory roller would be used for paving at proposed pump station sites. Construction of emergency pump station 1 could occur within approximately 20 feet of the existing historic Central Pump Station building. Because the Central Pump Station is a historic resource under CEQA, the “historic and some old buildings” Caltrans vibration criterion is used for construction of emergency pump station 1. As shown in [Table 18](#) a smaller 12-ton generic vibratory roller would generate a peak particle velocity of approximately 0.086 in/sec at a distance of 20 feet from the Central Pump Station, which would not exceed the 0.25 peak particle velocity in/sec Caltrans damage criteria for historic structures. However, a highway-class size vibratory roller would have the potential to generate a peak particle velocity of approximately 0.268 in/sec at a distance of 20 feet from the Central Pump Station, which would exceed the criterion. **Mitigation Measure M-NO-2: Vibration Reduction during Construction** would be required to reduce vibration impacts, and for the reasons discussed above, would reduce impacts to less-than-significant levels.

Other receptors in the vicinity of the Central Pump Station include residences; however, the nearest residence to the proposed location of use of the vibratory roller is approximately 50 feet away. As shown in [Table 15](#), vibration levels at a distance of 50 feet would be below the applicable criterion, and thus impacts would be less than significant.

**Table 18. Vibration Level for Emergency Pump Station Construction**

| Receptor type                                      | Construction Equipment              | Distance to Receptor (feet) | Reference Level at 25 Feet, PPV in/s | Calculated Level at Receptor, PPV in/s | Continuous Vibration Criteria1, PPV in/s | Exceeds Limit? |
|----------------------------------------------------|-------------------------------------|-----------------------------|--------------------------------------|----------------------------------------|------------------------------------------|----------------|
| Existing Central Pump Station (historic structure) | 12-ton Vibratory Roller             | 20                          | 0.067                                | 0.086                                  | 0.250                                    | No             |
| Existing Central Pump Station (historic structure) | Highway class size Vibratory Roller | 20                          | 0.210                                | 0.268                                  | 0.250                                    | Yes            |

## Soil Improvements and Vaults

A drill rig would be used to complete soil improvements and could be used within 50 feet of Lowell High School. Paving after completion of vaults would use a vibratory roller which could occur as close as 25 feet from the nearest residence. As shown in [Table 15](#), neither of these activities would exceed the vibration criterion at the receptor and therefore this impact would be less than significant.

## Summary of Construction Vibration

Although most construction would entail use of equipment that does not generate substantial vibration levels, certain construction processes such as paving would require the use of vibratory equipment such as vibratory rollers and use of the vibratory pile driver that generate high levels of vibration. To reduce vibration impacts and minimize the potential for damage to buildings, the SFPUC would be required to implement **Mitigation Measure M-NO-2: Vibration Reduction during Construction**, which for the reasons discussed above, would reduce impacts to less-than-significant levels.

See section on Sleep Disturbance below for a discussion of potential sleep disturbance due to vibration.

## Sleep Disturbance

The potential for sleep disturbance from vibration is measured by determining the vibration decibels (VdB) at the sensitive receptor. Vibration levels above 72 VdB have the potential to cause sleep disturbance. Use of the auger drill rig during nighttime trenchless construction could generate a vibration level of 94 VdB, which could disrupt sleep during trenchless construction (see [Table 19](#)). The criterion for sleep disturbance is expected to be exceeded at residential receptors within 80 feet of trenchless construction locations. The auger drill rig could be used for up to 6 nights to tunnel under the Muni tracks at Judah Street and Taraval Street. The auger drill rig would be used for 2 to 3 hours at a time once or twice each night. The duration of nighttime construction would thus be limited with a maximum of 6 nights during which there could be a few hours of elevated vibration levels. Despite the short duration this is considered to be a potentially significant impact. **Mitigation Measure M-NO-2: Vibration Reduction during Construction** would be implemented to minimize vibration effects, and **Mitigation Measure M-NO-1a: Construction Noise Control** would include a process for residents to register complaints during construction if there are concerns about noise or vibration impacts during nighttime work. Although mitigation may not eliminate all vibration impacts, due to the short duration, vibration impacts are considered less than significant with implementation of these mitigation measures, which reduce noise and vibration impacts for the reasons described above.

**Table 19. Nighttime Vibration Level for Trenchless Construction**

| Address                                                | Construction Activity      | Distance to Property Line, Feet | Calculated Level at Receptor (VdB) | Sleep Disturbance Vibration Limit (VdB) | Exceeds Limit? |
|--------------------------------------------------------|----------------------------|---------------------------------|------------------------------------|-----------------------------------------|----------------|
| <b>Residences near N Judah line and L Taraval line</b> | Trenchless Auger Drill Rig | 15                              | <b>94</b>                          | 72                                      | <b>Yes</b>     |

Notes: The nearest representative receptor is 3645 Judah Street. Up to approximately 6 nights of work may occur at certain trenchless crossing locations.

## Operation

Underground pipelines and their associated appurtenances such as hydrants, cabinets and sampling stations would not generate vibration during operation. The new emergency generator at the Lake Merced Pump Station and the new diesel engine pumps at the emergency pump stations would be exercised monthly and would not generate vibration that would be felt at nearby receptors. Vibration impacts would be less than significant.

**Impact C-NO-1. The project, in combination with cumulative projects, would not result in a significant cumulative impact on noise and vibration. (*Less than Significant with Mitigation*)**

**Construction Noise**

Cumulative construction-related noise increases would occur if any nearby cumulative projects are constructed at the same time as the project and affect the same sensitive receptors as the project for a substantial duration of time. Noise contributions from past and present projects are reflected in ambient noise levels within the project vicinity. The geographic extent for the cumulative impact analysis for noise is limited to cumulative projects within 1,000 feet of the project sites because noise levels and vibration attenuate with distance and line of sight obstructions. The Stonestown Development Project is over 1,000 feet from the nearest project facility and is thus not expected to combine with the project to result in cumulative construction impacts.

The St. Ignatius Academic Building Addition is located immediately adjacent the Sunset Boulevard corridor project variant pipeline alignment, but construction is under way and may be finished by 2026, before construction of the nearby project pipeline would begin. Similarly, the Caltrans repaving project on 19th Avenue is scheduled to be completed by 2027, and the southern portions of the repaving project, which could occur at the same time as construction of the initial phases of the project, are more than 1,000 feet from the project facilities. There is a potential that construction of SFPUC projects at the Merced Manor Reservoir and Sunset Reservoir could result in cumulative construction noise impacts. If construction of the emergency pump stations at those locations overlapped with construction of other SFPUC facilities there is a potential for a significant cumulative construction noise impact, due to the intensity of duration of construction of multiple facilities at the same location. Similarly, due to its long construction period, it is possible that some construction noise associated with the Parkmerced Project could overlap with construction of soil improvements in Lake Merced Boulevard, resulting in a significant cumulative construction noise impact. The SFPUC would implement its Standard Construction Measure 5 (Noise) for all of its projects, and the project would implement **Mitigation Measures M-NO-1a: Construction Noise Control** and **M-NO-2: Vibration Reduction during Construction**. Implementation of those measures would ensure that the project would have a less than cumulatively considerable contribution to significant construction noise impacts. Therefore, the project's cumulative impacts would be less than significant with mitigation.

**Operational Noise**

Operation of the project pipelines and appurtenances would not generate noise. Operation of the Lake Merced Pump Station new generator and the new emergency pump stations would generate operational noise from the installation of fixed mechanical equipment and would result in a potential significant operational noise impact. However, none of the cumulative projects include installation of mechanical equipment in the vicinity of the new emergency pump stations and therefore would not combine with the impacts of the project. Therefore, this cumulative impact is less than significant. The primary operational noise impact associated with cumulative projects would be traffic noise, as none of the cumulative projects include notable sources of ongoing operational noise. Development projects such as the Parkmerced Project and Stonestown Development Project have the potential to generate substantial traffic, which could result in a substantial level of additional traffic noise and potentially significant cumulative traffic noise impacts. However, the project would not generate any additional traffic and emergency generators and diesel pumps would be operated infrequently and would thus not result in a measurable contribution to cumulative noise.



in the project area. As a result, the project's contribution would be less than cumulatively considerable and its cumulative noise impacts during operations would be less than significant.

### Vibration

A cumulative vibration impact would occur when vibration from cumulative projects combines to exceed the applicable threshold at the same sensitive receptor. Because vibration attenuates rapidly with distance, cumulative projects would need to be under construction within very close proximity and at the same time as project construction for this to occur. The nearest cumulative project, the St. Ignatius Academic Building Addition would be located adjacent to a portion of the pipeline alignment, but construction would be complete before pipeline construction is expected to begin. None of the other cumulative projects would be located close enough to project facilities to result in cumulative vibration impacts from construction. Because vibration impacts are highly localized and attenuate with distance, significant cumulative construction vibration impacts would not occur. The project does not have the potential to result in cumulative vibration impacts from operation because the project would not result in groundborne vibration.

## E.8 Air Quality

| Topics:                                                                                                                                                                                                      | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>AIR QUALITY.</b> Would the project:                                                                                                                                                                       |                                |                                                    |                                     |                          |                          |
| a) Conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                              | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal, state, or regional ambient air quality standard? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Expose sensitive receptors to substantial pollutant concentrations?                                                                                                                                       | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?                                                                                            | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### SETTING

#### SAN FRANCISCO BAY AREA AIR BASIN

The project sites are within the City and County of San Francisco. The Bay Area Air District is the regional agency with jurisdiction over the nine-county San Francisco Bay Area Air Basin (air basin), which includes San Francisco, Alameda, Contra Costa, Marin, San Mateo, Santa Clara, and Napa counties and portions of Sonoma and Solano counties. The Bay Area Air District is responsible for attaining and maintaining air

quality in the air basin within federal and state air quality standards, as established by the federal Clean Air Act and the California Clean Air Act, respectively. Specifically, the Bay Area Air District is responsible for monitoring ambient air pollutant levels throughout the air basin and developing and implementing strategies to attain the applicable federal and state standards. The federal and state clean air acts require plans to be developed for areas that do not meet air quality standards, generally.

The most recent air quality plan, the 2017 Clean Air Plan, was adopted by the Bay Area Air District on April 19, 2017.<sup>63</sup> The clean air plan updates the most recent Bay Area ozone plan, the 2010 Clean Air Plan, in accordance with the requirements of the state Clean Air Act to implement all feasible measures to reduce ozone; provide a control strategy to reduce ozone, particulate matter, air toxics, and GHG emissions in a single, integrated plan; and establish emission control measures to be adopted or implemented. The clean air plan contains the following primary goals:

- Protect air quality and health at the regional and local scale: attain all state and national air quality standards, and eliminate disparities among Bay Area communities in cancer health risk from toxic air contaminants
- Protect the climate: reduce Bay Area GHG emissions to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050

The clean air plan represents the most current applicable air quality plan for the air basin. Consistency with this plan determines whether the project would conflict with or obstruct implementation of air quality plans (checklist question E.8.a).

## CRITERIA AIR POLLUTANTS

In accordance with the state and federal clean air acts, air pollutant standards are identified for the following six criteria air pollutants: ozone, carbon monoxide (CO), particulate matter,<sup>64</sup> nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and lead. These air pollutants are termed criteria air pollutants because they are regulated by the development of specific public health- and welfare-based criteria to determine permissible levels. The state and federal air quality standards were developed to protect public health and welfare. Exposure to these criteria air pollutants, even for a short time, may increase the risk of health effects. In general, the air basin experiences low concentrations of most pollutants when compared to federal or state standards. The air basin is designated<sup>65</sup> as either in *attainment*<sup>66</sup> or *unclassified*<sup>67</sup> for most criteria pollutants, with the exception of ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>, for which the air basin is designated as *non-attainment*<sup>68</sup> for either the state or federal standards.

By its very nature, regional air pollution is largely a cumulative impact in that no single project is sufficient in size, by itself, to result in non-attainment of air quality standards. Instead, a project's individual emissions

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63 Bay Area Air Quality Management District, Spare the Air Cool the Climate, Final 2017 Clean Air Plan, April 19, 2017, <https://www.baaqmd.gov/en/plans-and-climate/air-quality-plans/current-plans>, accessed September 25, 2024.

64 PM<sub>10</sub>, often termed “coarse” particulate matter, is composed of particles that are 10 microns or less in diameter. PM<sub>2.5</sub>, termed “fine” particulate matter, is composed of particles that are 2.5 microns or less in diameter.

65 Bay Area Air Quality Management District, Standards and Attainment Status, <https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status#eleven>, accessed September 25, 2024.

66 “Attainment” status refers to regions that are meeting federal and/or state standards for a specified criteria pollutant.

67 “Unclassified” refers to regions where not enough data exist to determine the region's attainment status for a specified criteria air pollutant.

68 “Non-attainment” refers to regions that do not meet federal and/or state standards for a specified criteria pollutant.

contribute to existing cumulative air quality impacts. If a project's contribution to cumulative air quality impacts is considerable, then the project's impact on air quality would be considered significant.

Projects may contribute to regional criteria air pollutants during both their construction and operational phases. Projects typically result in ozone precursor (reactive organic gases [ROG] and oxides of nitrogen [NO<sub>x</sub>]) and particulate matter emissions because of increases in vehicle trips, space heating and natural gas combustion, landscape maintenance, and construction activities. The Bay Area Air District has established significance thresholds for non-attainment criteria air pollutants, as shown in Table 20 (p. 126).<sup>69</sup>

**Table 20. Criteria Air Pollutants and Precursors Significance Thresholds (Project Level)**

| Pollutant         | Construction Thresholds<br>Average Daily Emissions<br>(pounds/day) | Operational Threshold<br>Average Daily Emissions<br>(pounds/day) | Operational Threshold<br>Maximum Annual Emissions<br>(tons/year) |
|-------------------|--------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| ROG               | 54                                                                 | 54                                                               | 10                                                               |
| NO <sub>x</sub>   | 54                                                                 | 54                                                               | 10                                                               |
| PM <sub>10</sub>  | 82 (exhaust)                                                       | 82                                                               | 15                                                               |
| PM <sub>2.5</sub> | 54 (exhaust)                                                       | 54                                                               | 10                                                               |
| Fugitive<br>Dust  | Best Management Practices                                          | None                                                             | None                                                             |

SOURCE: Bay Area Air District, CEQA Air Quality Guidelines, 2022.

The significance thresholds for ozone precursors ROG and NO<sub>x</sub> are based on the stationary source limits in Bay Area Air District regulation 2, rule 2, which requires that any new source that emits criteria air pollutants above the ROG and NO<sub>x</sub> emissions limit (shown in Table 20, above) must offset those emissions. The significance thresholds for particulate matter are based on the emissions limit in the federal New Source Review for stationary sources in nonattainment areas. The Bay Area Air District's CEQA Air Quality Guidelines<sup>70</sup> and supporting materials provide additional evidence to support these thresholds.

These thresholds of significance were designed to ensure that no individual project (or source) would create a significant adverse impact and that no sensitive receptor would experience a significant adverse impact from any individual project. Projects that would result in criteria air pollutant emissions below these significance thresholds would not result in a cumulatively considerable net increase in non-attainment criteria air pollutants in the air basin.<sup>71</sup> Due to the temporary nature of construction activities, only the average daily thresholds are applicable to construction phase emissions.

<sup>69</sup> As discussed in Section A, Project Description, any excavated soil that is classified as hazardous waste by state and federal standards could be trucked directly to an appropriate facility for disposal. The nearest class I hazardous waste disposal facility is the Kettleman Hills Landfill, which is within the jurisdiction of the San Joaquin Valley Air Pollution Control District (San Joaquin Valley air basin). Although haul trips to the Kettleman Hills Landfill would result in some project construction-related emissions in the San Joaquin Valley air basin, the majority of project emissions would occur in the San Francisco Bay Area air basin where the Bay Area Air District requires more stringent measures. Because the amount of project construction-related emissions that would be released in the San Joaquin Valley air basin would be small compared to total project construction-related emissions, and because the Bay Area air basin has more stringent project significance thresholds than the San Joaquin Valley air basin, this analysis assumes that if emissions are consistent with Bay Area air basin thresholds, consistency with San Joaquin air basin thresholds would also be achieved. Therefore, compliance with Bay Area Air District thresholds and plans has been applied to the analysis herein.

<sup>70</sup> Bay Area Air Quality Management District, 2022 CEQA Guidelines, April 20, 2022, <https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines>, accessed September 24, 2024.

<sup>71</sup> Ibid.

## OZONE

As discussed, previously, the Bay Area air basin currently is designated as non-attainment for ozone. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO<sub>x</sub>. Ozone can cause respiratory problems (e.g., chest pain, airway constriction, shortness of breath, coughing, throat irritation) and eye irritation, and can exacerbate existing respiratory problems such as asthma, emphysema, and bronchitis.<sup>72</sup>

The significance thresholds for ROG and NO<sub>x</sub> are based on the stationary source limits in Bay Area Air District regulation 2, rule 2, which requires that any new source that emits criteria air pollutants above the ROG and NO<sub>x</sub> emissions limit (shown in Table 20) must offset those emissions. Although this regulation applies to new or modified stationary sources, projects such as the proposed project would result in ROG and NO<sub>x</sub> emissions from increases in vehicle trips, architectural coating, and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of projects, and projects that would result in emissions below these thresholds would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in ROG and NO<sub>x</sub> emissions. Because of the temporary nature of construction activities, only the average daily thresholds for emissions occurring in the Bay Area air basin are applicable to construction phase emissions.

## CARBON MONOXIDE

CO is an odorless, colorless gas usually formed by the incomplete combustion of fuels. The single largest source of CO is motor vehicles, with the highest emissions occurring during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. The Bay Area air basin is in attainment for CO for both the state and federal standards.

## PARTICULATE MATTER (PM<sub>10</sub> AND PM<sub>2.5</sub>)

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from human-made and natural sources. Particulate matter regulated by the state and federal clean air acts is measured in two size ranges: PM<sub>10</sub> and PM<sub>2.5</sub>. Motor vehicles generate about one-half of the Bay Area air basin's particulates, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the California Air Resources Board, studies in the U.S. and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks," and studies of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children." The California Air Resources Board also reports that statewide attainment of particulate matter standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits and avoid hundreds of thousands of episodes of respiratory illness in California. Among the criteria air pollutants that are regulated,

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72 U.S. Environmental Protection Agency, Health Effects of Ozone Pollution, <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>, accessed March 28, 2024.

particulates appear to represent a serious ongoing health hazard. In 1999, the Bay Area Air District's CEQA Air Quality Guidelines reported that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area.

PM<sub>2.5</sub> is of particular concern. Exposure to fine particulate matter (i.e., PM<sub>2.5</sub>) is strongly associated with mortality, respiratory diseases, and decreased lung development in children, and other endpoints such as hospitalization for cardiopulmonary disease.<sup>73</sup> Epidemiologic studies have demonstrated that people who live near freeways and high-traffic roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections, and decreased pulmonary function and lung development in children.<sup>74</sup> New studies are also showing that long-term average exposure to PM<sub>2.5</sub> is associated with an increased risk of death from the novel coronavirus 2019 disease (COVID-19) in the U.S. One study found that an increase of 1 microgram per cubic meter (µg/m<sup>3</sup>) in PM<sub>2.5</sub> is associated with an 8 percent increase in the COVID-19 death rate.<sup>75</sup> Exposure to wildfire smoke (which includes PM<sub>2.5</sub>) experienced by Californians in 2020 also could have contributed to increased cases of COVID-19.<sup>76</sup> These studies demonstrate a correlational relationship between exposure to PM<sub>2.5</sub> and increases in the COVID-19 death rate, not a causal relationship.

Similar to ozone precursor thresholds identified above, the significance thresholds for particulate matter are based on the emissions limit in the federal New Source Review for stationary sources in nonattainment areas. The project would result in particulate matter emissions from increases in vehicle miles traveled during operation and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of the project. Again, because project construction activities would be temporary, only the average daily thresholds would be applicable to construction-phase emissions.

## FUGITIVE DUST

Additionally, fugitive dust emissions are typically generated during construction. Studies have shown that the application of best management practices at construction sites significantly control fugitive dust, and individual measures have been shown to reduce fugitive dust by 30 to 90 percent.<sup>77</sup> The Bay Area Air District has identified a number of best management practices to control fugitive dust emissions from construction activities.<sup>78</sup> The City's Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008) requires a number of measures to control fugitive dust, and the best management practices employed in compliance with the City's Construction Dust Control Ordinance are an effective strategy for controlling construction-related fugitive dust.

## LOCAL HEALTH RISKS AND HAZARDS

In addition to criteria air pollutants, individual projects may emit *toxic air contaminants*. Toxic air contaminants collectively refer to a diverse group of air pollutants that can cause chronic (i.e., of long duration) and acute (i.e., severe but short-term) adverse effects on human health, including carcinogenic

73 San Francisco Department of Public Health, Assessment and Mitigation of Air Pollutant Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Review, May 7, 2008.

74 San Francisco Department of Public Health, Assessment and Mitigation of Air Pollutant Health Effect from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review, May 7, 2008.

75 Wu, X., R. C. Nethery, B. M. Sabath, D. Braun, and F. Dominici, Exposure to Air Pollution and COVID-19 Mortality in the United States: A nationwide cross-sectional study. April 27, 2020, , accessed March 28, 2024.

76 Xiaodan, Z., K. Josey, L. Kamareddine, M. C. Caine, T. Liu, L. J. Mickley, M. Cooper, and F. Dominici, Excess of COVID-19 Cases and Deaths due to Fine Particulate Matter Exposure during the 2020 Wildfires in the United States, August 13, 2021, , accessed March 28, 2024.

77 Western Regional Air Partnership, Fugitive Dust Handbook, September 7, 2006, [https://www.env.nm.gov/wp-content/uploads/sites/2/2017/02/WRAP\\_FDHandbook\\_Rev\\_06.pdf](https://www.env.nm.gov/wp-content/uploads/sites/2/2017/02/WRAP_FDHandbook_Rev_06.pdf), accessed November 21, 2024.

78 Bay Area Air Quality Management District, 2022 CEQA Guidelines, April 20, 2022.



effects. Human health effects of toxic air contaminants include birth defects, neurological damage, cancer, and mortality. Hundreds of different types of toxic air contaminants exist with varying degrees of toxicity; at a given level of exposure, one toxic air contaminant may pose a hazard that is many times greater than another.

Unlike criteria air pollutants, toxic air contaminants do not have ambient air quality standards but are regulated by the Bay Area Air District using a risk-based approach to determine which sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated and considered together with information regarding the toxic potency of the substances, to provide quantitative estimates of health risks.<sup>79</sup>

Exposure to fine particulate matter (i.e., PM<sub>2.5</sub>) is strongly associated with mortality, respiratory diseases, and decreased lung development in children, and other endpoints such as hospitalization for cardiopulmonary disease. Diesel particulate matter also is of concern. The California Air Resources Board identified diesel particulate matter as a toxic air contaminant in 1998, primarily based on evidence demonstrating cancer effects in humans.<sup>80</sup> The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other toxic air contaminant routinely measured in the region.

Air pollution does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Certain land uses such as residences, schools, children's day care centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress or, as in the case of residential receptors, their exposure time is greater than that for other land uses. Therefore, these groups are referred to as sensitive receptors. Exposure assessment guidance typically assumes that residences would be exposed to air pollution 24 hours per day, 7 days a week, for 30 years.<sup>81</sup> Therefore, assessments of air pollutant exposure to residents typically result in the greatest adverse health outcomes compared to other population groups, such as workers.

To identify areas of San Francisco that are most adversely affected by sources of toxic air contaminants, San Francisco partnered with the Bay Area Air District to conduct a citywide health risk assessment based on an inventory and assessment of air pollution and exposures from mobile, stationary, and area sources within San Francisco. Areas with poor air quality, termed the air pollutant exposure zone were identified based on health-protective criteria that considered estimated cancer risk, exposures to fine particulate matter, proximity to freeways, and locations with particularly vulnerable populations. Each of the air pollutant exposure zone criteria is discussed below.

## EXCESS CANCER RISK

The air pollutant exposure zone includes areas where modeled cancer risk exceeds 100 incidents per 1 million persons exposed. This criterion is based on United States Environmental Protection Agency (EPA) guidance for conducting air toxic analyses and making risk management decisions on a facility and

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<sup>79</sup> In general, a health risk assessment is required if the air district concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk. The project is then subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects, estimating the increased risk of cancer from exposure to one or more toxic air contaminants.

<sup>80</sup> California Air Resources Board, Identification of Diesel Exhaust as a Toxic Air Contaminant, April 22, 1998, <https://ww2.arb.ca.gov/resources/documents/toxic-air-contaminant-identification-reports>, accessed September 25, 2024.

<sup>81</sup> California Office of Environmental Health, Hazard Assessment, Air Toxics Hot Spot Program Risk Assessment Guidelines, February 2015.

community scale.<sup>82</sup> The 100 per 1 million excess cancer cases also is consistent with the ambient cancer risk in the most pristine portions of the Bay Area based on Bay Area Air District regional modeling.<sup>83</sup>

## FINE PARTICULATE MATTER

Total fine particulate matter (i.e., PM<sub>2.5</sub>) exposure concentrations, which include emissions from the primary sources that were modeled in the citywide health risk assessment (discussed above) and ambient (background) PM<sub>2.5</sub> concentrations are compared against the annual average PM<sub>2.5</sub> National Ambient Air Quality Standards. In 2013, the EPA lowered the annual average PM<sub>2.5</sub> standard from 15 µg/m<sup>3</sup> to 12 µg/m<sup>3</sup>.<sup>84</sup> On February 7, 2024, the EPA published the Final Rule: Reconsideration of the National Ambient Air Quality Standards for Particulate Matter.<sup>85</sup> In this reconsideration document, the EPA lowered the primary annual PM<sub>2.5</sub> standard from 12 µg/m<sup>3</sup> to 9 µg/m<sup>3</sup>. The air pollutant exposure zone for San Francisco's health vulnerable locations is based on the health protective PM<sub>2.5</sub> standard of 9 µg/m<sup>3</sup>, and a standard of 10 µg/m<sup>3</sup> for all other areas.

## PROXIMITY TO FREEWAYS

According to the California Air Resources Board, studies have shown an association between the proximity of sensitive land uses to freeways and a variety of respiratory symptoms, asthma exacerbations, and decreases in lung function in children. Siting sensitive uses near freeways increases both exposure to air pollution and the potential for adverse health effects. Because evidence shows that sensitive uses in an area within a 500-foot buffer of any freeway are at an increased health risk from air pollution,<sup>86</sup> parcels that are within 500 feet of freeways are included in the air pollutant exposure zone.

## HEALTH VULNERABLE LOCATIONS

Based on the Bay Area Air District's evaluation of health vulnerability in the Bay Area, those zip codes (94102, 94103, 94110, 94124, and 94130) in the worst quintile of Bay Area health vulnerability scores from air pollution-related causes were afforded additional protection by lowering the standards for identifying parcels in the air pollutant exposure zone to: (1) an excess cancer risk greater than 90 per 1 million persons exposed, and/or (2) PM<sub>2.5</sub> concentrations in excess of 9 µg/m<sup>3</sup>.<sup>87</sup>

The above citywide health risk modeling is referenced in the Enhanced Ventilation Required for Urban Infill Sensitive Use Developments or Health Code, article 38 (Ordinance 224-14, effective December 8, 2014) (article 38). The purpose of article 38 is to protect the public health and welfare by establishing an air pollutant exposure zone and imposing an enhanced ventilation requirement for all urban infill sensitive use development within the zone. The air pollutant exposure zone is also referenced in the San Francisco Environment Code section 25, known as the Clean Construction Ordinance (Ordinance 28-15, effective April 19, 2015). The purpose of the Clean Construction Ordinance is to protect the public health, safety, and welfare by requiring contractors on City public works projects to reduce diesel and other fine particulate emissions generated by construction activities. The City of San Francisco updated<sup>88</sup> the air pollutant

82 Bay Area Air Quality Management District, 2022 CEQA Guidelines, April 20, 2022.

83 Ibid.

84 U.S. Environmental Protection Agency, National Ambient Air Quality Standard for Particulate Matter, January 27, 2023, <https://www.govinfo.gov/content/pkg/FR-2023-01-27/pdf/2023-00269.pdf>, accessed September 26, 2024.

85 40 CFR Parts 50, 53, and 58, February 7, 2024.

86 California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005.

87 San Francisco Planning Department and San Francisco Department of Public Health, *San Francisco Citywide Health Risk Assessment: Technical Support Documentation*, September 2020.

88 San Francisco Planning Department, *Air Quality Review*, February 2025, <https://sfplanning.org/air-quality>, accessed May 15, 2025.

exposure zone boundaries in February 2025 to reflect the current federal PM<sub>2.5</sub> standard of 9 µg/m<sup>3</sup>. As a result of the update, there was a minor increase in the areas of San Francisco included in the air pollutant exposure zone map.

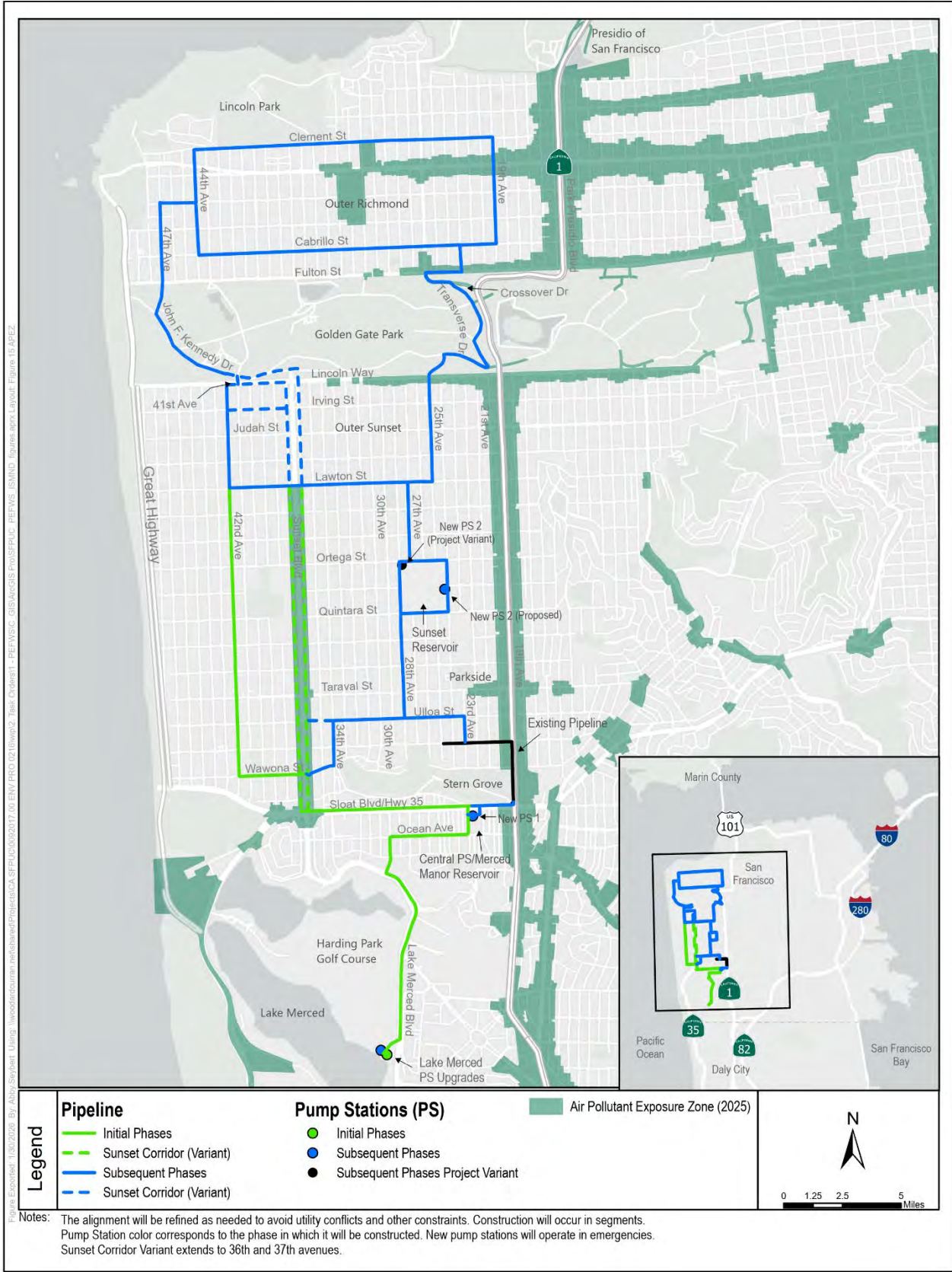
As shown in [Figure 15](#), the project crosses through portions of the current air pollutant exposure zone at many points along the pipeline alignment, including at the entrance and exit of the alignment's eastern transect of Golden Gate Park (i.e., Transverse Drive at Lincoln Way and Fulton Street at 22nd Avenue) as well as at two points in the Richmond neighborhood (i.e., Geary Boulevard at 19th Avenue and Clement Street at 29th Avenue). Other areas of overlap between the project and the air pollutant exposure zone are along 36th and 37th Avenues and along Sloat Boulevard near 19th Avenue. Chapter 25 of the Environmental code (Clean Construction) applies to the project. The ordinance requires the following for all public work "major construction projects," defined as those that last 20 or more cumulative workdays, that use off-road equipment that is 25 horsepower or greater for 20 hours or more during any portion of the project, and occurring in the air pollutant exposure zone:

- Equipment must meet or exceed Tier 2 standards for off-road engines and operate with the most effective California Air Resources Board *verified diesel emissions control strategy*<sup>89</sup> available for the engine type (Tier 4 engines automatically meet this requirement).
- Portable diesel engines are prohibited where access to alternative sources of power is available.
- Idling of off-road and on-road equipment is limited to two minutes at any location, except as provided in applicable state regulations (e.g., traffic conditions, safe operating conditions). The contractor must post legible and visible signs in English, Spanish, and Chinese in designated queuing areas and at the construction site to remind operators of the two-minute idling limit.
- A construction emissions minimization plan must be prepared before the start of construction. The plan is required to include estimates of the construction timeline by stage and a description of each piece of off-road equipment required for every construction stage (e.g., equipment type, manufacturer, identification number, model year, tier rating, horsepower, expected fuel usage, hours of operation). Additional details may be included for verified diesel emission control strategies (e.g., technology type, serial number, make, model, manufacturer, California Air Resources Board verification number level). For off-road equipment using alternative fuels, the description must specify the type of alternative fuel being used.
- Monitoring and reporting actions are required during construction to document compliance with the ordinance. Waivers to the requirements of the Clean Construction Ordinance can be issued under certain circumstances (e.g., lack of available qualifying equipment).
- As part of the project, the SFPUC would implement its Standard Construction Measure 2 (Air Quality), which requires all SFPUC projects in the city to comply with the Clean Construction Ordinance. In addition, projects within the air pollutant exposure zone require special consideration to determine whether the project's activities would add a substantial amount of emissions to areas already adversely affected by poor air quality.

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89 According to the Clean Construction Ordinance, "VDECS" means a verified diesel emission control strategy, designed primarily for the reduction of diesel particulate matter emissions, which has been verified by the California Air Resources Board pursuant to "Verification Procedures, Warranty and In-Use Strategies to Control Emissions from Diesel Engines," Title 13, California Code of Regulations, Sections 2700-2710. VDECS can be verified to achieve Level 1 diesel particulate matter reductions (at least 25 percent), Level 2 diesel particulate matter reductions (at least 50 percent), or Level 3 diesel particulate matter reductions (at least 85 percent).

Figure 15. Air Pollutant Exposure Zone





## HEALTH RISK AND HAZARDS THRESHOLDS

The San Francisco Department of Public Health uses the air pollutant exposure zone criteria discussed above to define “substantial pollutant concentrations” with respect to toxic air contaminants that cause cancer and PM<sub>2.5</sub> concentrations; the department uses the Bay Area Air District’s health risk thresholds for determining whether a project’s contribution to cumulatively significant health risks is considerable in certain scenarios. In other scenarios, the department has determined that, due to severity of cumulative health risks, a more health protective threshold is required for determining whether a project’s contribution to health risks is considerable. The air pollutant exposure zone criteria as well as the project contribution thresholds are shown in Table 21 below.

**Table 21. Health Risk Significance Thresholds**

| Affected Receptor                                                                                                                                                                | Thresholds for Construction and Operation<br>PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | Thresholds for Construction and Operation<br>Excess Cancer Risk<br>(cases per 1 million population) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Air Pollutant Exposure Zone Criteria</b>                                                                                                                                      |                                                                                        |                                                                                                     |
| Outside health vulnerability zip codes                                                                                                                                           | 9.0                                                                                    | 100.0                                                                                               |
| Within health vulnerability zip codes                                                                                                                                            | 9.0                                                                                    | 90.0                                                                                                |
| <b>Significance Thresholds</b>                                                                                                                                                   |                                                                                        |                                                                                                     |
| Project contribution thresholds to receptor locations not within the air pollutant exposure zone, but would meet the air pollutant exposure zone criteria because of the project | 0.3                                                                                    | 10.0                                                                                                |
| Project contribution thresholds to receptor locations within the air pollutant exposure zone                                                                                     | 0.2                                                                                    | 7.0                                                                                                 |

SOURCE: San Francisco Planning Department, Air Quality and Greenhouse Gas Analysis Guidelines, February 2025.

### **Impact AQ-1: The proposed project would not conflict with or obstruct implementation of the 2017 Clean Air Plan. (*Less than Significant*)**

As stated above, the most recently adopted air quality plan for the Bay Area air basin is the Bay Area Air District’s 2017 Clean Air Plan.<sup>90</sup> The clean air plan is a road map that demonstrates how the San Francisco Bay Area will achieve compliance with the state ozone standards and how the region will reduce the transport of ozone and ozone precursors to neighboring air basins. In determining consistency with the clean air plan, this analysis considers whether the project would: (1) support the primary goals of the plan; (2) include applicable control measures from the plan; and (3) avoid disrupting or hindering implementation of control measures identified in the plan.

90 Bay Area Air Quality Management District, *Spare the Air Cool the Climate, Final 2017 Clean Air Plan*, April 19, 2017, <https://www.baaqmd.gov/en/plans-and-climate/air-quality-plans/current-plans>, accessed September 25, 2024



The primary goals of the clean air plan are to: (1) protect air quality and health at the regional and local scale; (2) eliminate disparities among Bay Area communities in cancer health risk from toxic air contaminants; and (3) protect the climate by reducing GHG emissions. To meet the primary goals, the plan recommends 85 specific control measures and actions. These control measures are grouped into various categories and include stationary and area source measures, mobile source measures, transportation control measures, land use measures, and energy and climate measures. The clean air plan recognizes that, to a great extent, community design dictates individual travel mode, and that a key long-term control strategy to reduce emissions of criteria pollutants, air toxics, and GHG emissions from motor vehicles is to channel future Bay Area growth into vibrant urban communities where goods and services are close at hand and there are a range of viable transportation options.

The control measures most applicable to the project are transportation control measures and energy and climate control measures. The project's impact with respect to GHG emissions is discussed in Section E.9, Greenhouse Gas Emissions, which demonstrates that the project would comply with the applicable provisions of the City's GHG reduction strategy. Furthermore, operation of the project would not require hiring additional SFPUC personnel and would not result in an increase in vehicle miles traveled, as discussed in Section E.6, Transportation and Circulation. The project's anticipated one maintenance vehicle per month would result in a negligible increase in air pollutant emissions. Examples of a project that could cause the disruption or delay of the clean air plan control measures are projects that would preclude the extension of a transit line or bike path, or projects that propose excessive parking beyond parking requirements. The project would not preclude the extension of a transit line or a bike path or any other transit improvement, and thus would not disrupt or hinder implementation of the clean air plan's control measures. Transportation control measures that are identified in the clean air plan are implemented by the General Plan and the planning code, for example, through the city's Transit First Policy, transportation demand management program requirements, and transit impact development fees. Compliance with these requirements would ensure the project includes relevant transportation control measures specified in the clean air plan. Therefore, the project would include applicable control measures identified in the clean air plan to meet the plan's primary goals.

The project would include improvements to the existing Lake Merced Pump Station and the construction of two new pump stations, underground water transmission pipelines, aboveground electrical and water sampling cabinets, and fire hydrants. Any disruptions to transit lanes or bike paths during construction would be temporary, and all paths and lanes would be restored as part of the project's completion. The project would thus would not disrupt or hinder implementation of the clean air plan's control measures.

For the reasons described above, the project would not conflict with or obstruct implementation of the clean air plan, and this impact would be less than significant. No mitigation would be required.

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**Impact AQ-2: The project's construction activities would generate fugitive dust and criteria air pollutants, but would not result in a cumulatively considerable net increase of non-attainment criteria air pollutants within the Bay Area air basin. (*Less than Significant*)**

Construction activities (short-term) typically result in emissions of ozone precursors and particulate matter in the form of dust (fugitive dust) and exhaust (e.g., from vehicle tailpipe emissions). Emissions of ozone

precursors and fine particulate matter are primarily from the combustion of fuel from on-road and off-road vehicles. ROG are typically emitted from activities that involve painting, other types of architectural coatings, or asphalt paving. During the project's multi-phase construction periods, the last of which is expected to conclude in 2040, construction activities would have the potential to result in emissions of ozone precursors, particulate matter, and ROG as discussed below.

## Fugitive Dust

Project-related demolition, excavation, grading, and other construction activities would disturb soil that could become wind-blown dust thereby introducing fugitive dust, or particulate matter 10 microns or less in diameter, into the local atmosphere. Depending on exposure, adverse health effects such as causing eye watering or irritation to the lungs, nose and throat could occur from this particulate matter in general and existing contaminants (e.g., lead, asbestos) that may be in the soil. The current health burden of particulate matter demands that, where possible, public agencies take feasible available actions to reduce sources of particulate matter exposure.

In response, the San Francisco Board of Supervisors approved the Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008), with the intent of reducing the quantity of dust generated during site preparation, demolition, and construction work to protect the health of the general public and on-site workers, and minimize public nuisance complaints. The Construction Dust Control Ordinance requires that all site preparation work, demolition, or other construction activities in San Francisco with the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures, whether or not the activity would require a permit from the Department of Building Inspection.<sup>91</sup>

For projects sites greater than 0.5 acre, such as the project, the Construction Dust Control Ordinance would require the SFPUC to prepare a dust control plan that is provided to the San Francisco Department of Public Health.<sup>92</sup> The site-specific dust control plan would require the implementation of additional dust control measures such as installation of dust curtains and windbreaks, independent third-party inspections and monitoring, provision of a public complaint hotline, and suspension of construction during high wind conditions. The SFPUC would comply with the substantive requirements of the Construction Dust Control Ordinance and would require implementation of its Standard Construction Measure 2 (Air Quality).

The site-specific construction dust control plan would require the SFPUC (or its construction contractor[s]) to submit a map to the Director of Public Health, showing all sensitive receptors within 1,000 feet of the project area; wet down areas of soil at least three times per day; provide an analysis of wind direction and install upwind and downwind particulate dust monitors; record particulate monitoring results; hire an independent, third-party entity to conduct inspections and keep a record of those inspections; establish shut-down conditions based on wind and soil migration; establish a hotline for surrounding community members who may be potentially affected by project-related dust; limit the area subject to construction activities at any one time; install dust curtains and windbreaks on the property lines, as necessary; limit the amount of soil in hauling trucks to the size of the truck bed and secure the soil with a tarpaulin; enforce a 15-mile-per-hour speed limit for vehicles entering and exiting construction areas; sweep affected streets with water sweepers at the end of the work day; install and use wheel washers to clean truck tires; terminate

91 The director of the Department of Building Inspection may waive this requirement for activities on sites less than 0.5 acre that are unlikely to result in any visible wind-blown dust.

92 The Department of Building Inspection will not issue a building permit without written notification from the director of public health that the applicant has a site-specific dust control plan, unless the director waives the requirement.

construction activities when winds exceed 25 miles per hour; apply soil stabilizers to inactive areas; and sweep off adjacent streets to reduce particulate emissions. The SFPUC would be required to designate an individual to monitor compliance with these dust control requirements. San Francisco Ordinance 175-91 restricts the use of potable water for soil compaction and dust control activities undertaken in conjunction with any construction or demolition project occurring within the boundaries of San Francisco, unless permission is obtained from the SFPUC. Non-potable water must be used for soil compaction and dust control activities during project construction and demolition. Separately, the SFPUC operates a recycled water truck-fill station at the Southeast Water Pollution Control Plant that provides recycled water for these activities at no charge.

Implementation of fugitive dust control measures and development and implementation of a project-specific dust control plan in compliance with the Construction Dust Control Ordinance and SFPUC Standard Construction Measure 2 (Air Quality) would reduce the project's potential to result in a cumulatively considerable net increase of fugitive dust. As a result, the impact on air quality would be less than significant. No mitigation would be required.

### Criteria Air Pollutants

As discussed above, project construction activities would result in emissions of criteria air pollutants from the use of off- and on-road vehicles and equipment and other construction activities. The project's construction criteria air pollutant emissions were quantitatively analyzed to determine whether the project may exceed the criteria air pollutant significance thresholds identified in [Table 20](#), above. Construction-related criteria air pollutants that would be generated by the project were modeled using the California Emissions Estimator Model (CalEEMod) and details are provided in **Appendix D**. CalEEMod was developed, including default data (e.g., emission factors, meteorology), in collaboration with Bay Area Air District staff. Default assumptions were used where project-specific information was unknown.

Additional assumptions and detailed results by construction phase are provided in **Appendix D**. The project's construction-related emissions are shown in [Table 22](#).

As shown in [Table 22](#), project construction emissions would be below the threshold of significance for ROG, NO<sub>x</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> exhaust emissions, in each year, regardless of the engine type. Therefore, project construction would not exceed any of the significance thresholds for criteria air pollutants. As a result, the impact on air quality would be less than significant. No mitigation would be required.

**Table 22. Project Construction Emissions with Use of Fleet Average Engines (average pounds per day)**

| Construction/Year                                  | ROG (lb/day) | NO <sub>x</sub> (lb/day) | Exhaust PM <sub>10</sub> (lb/day) | Exhaust PM <sub>2.5</sub> (lb/day) |
|----------------------------------------------------|--------------|--------------------------|-----------------------------------|------------------------------------|
| 2026                                               | 4.69         | 46.46                    | 1.46                              | 1.31                               |
| 2027                                               | 4.00         | 39.69                    | 1.15                              | 1.08                               |
| 2028                                               | 5.23         | 49.69                    | 1.38                              | 1.31                               |
| 2029                                               | 3.92         | 35.92                    | 0.92                              | 0.85                               |
| 2030                                               | 3.00         | 26.92                    | 0.62                              | 0.62                               |
| 2031                                               | 3.15         | 28.69                    | 0.69                              | 0.62                               |
| 2032                                               | 1.54         | 14.62                    | 0.31                              | 0.31                               |
| 2033                                               | 1.54         | 14.31                    | 0.31                              | 0.31                               |
| 2034                                               | 1.46         | 14.08                    | 0.31                              | 0.23                               |
| 2035                                               | 1.46         | 13.77                    | 0.23                              | 0.23                               |
| 2036                                               | 1.38         | 13.54                    | 0.23                              | 0.23                               |
| 2037                                               | 1.38         | 13.23                    | 0.23                              | 0.15                               |
| 2038                                               | 1.69         | 15.62                    | 0.23                              | 0.23                               |
| 2039                                               | 2.85         | 26.23                    | 0.38                              | 0.31                               |
| 2040                                               | 2.62         | 24.31                    | 0.38                              | 0.31                               |
| Bay Area Air District<br>Significance<br>Threshold | 54           | 54                       | 82                                | 54                                 |
| Exceeds Threshold?                                 | No           | No                       | No                                | No                                 |

**Impact AQ-3: During project operations, the proposed project would result in emissions of criteria air pollutants, but not at levels that would result in a cumulatively considerable net increase in non-attainment criteria air pollutants. (*Less than Significant*)**

Project operations under normal conditions would generate criteria pollutant emissions associated with vehicle traffic (mobile sources), on-site equipment (exercise of diesel pumps), energy use at the pump stations, and testing of the emergency backup diesel generator. Operational-related criteria air pollutants associated with normal project activities were quantified using CalEEMod, including detailed assumptions and results as provided in **Appendix D**. Default assumptions were used where project-specific information was unknown. As currently operated, the existing SFPUC emergency firefighting water system generates a baseline level of criteria pollutants from operation of pumps and maintenance vehicles. The emissions presented below are net of any baseline operational emissions and reflect the incremental increase in operational emissions as compared to current operations.

The average daily and the annual emissions associated with operation of the project are shown in **Table 23** and **Table 24**. The tables below also include the thresholds of significance for criteria air pollutants.

**Table 23. Net Operational Criteria Pollutant Emissions (average pounds per day)**

| Emission Source                 | ROG     | NO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|---------------------------------|---------|-----------------|------------------|-------------------|
| Generator                       | 0.09    | 0.41            | 0.01             | 0.01              |
| Pumps                           | 0.12    | 1.28            | 0.02             | 0.02              |
| Mobile                          | < 0.005 | < 0.005         | 0.01             | < 0.005           |
| Total                           | 0.21    | 1.69            | 0.04             | 0.03              |
| Bay Area Air District Threshold | 54      | 54              | 82               | 54                |
| Exceeds Threshold?              | No      | No              | No               | No                |

**Table 24. Net Operational Criteria Pollutant Emissions (tons per year)**

| Emission Source                 | ROG     | NO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|---------------------------------|---------|-----------------|------------------|-------------------|
| Generator                       | 0.02    | 0.07            | 0.002            | 0.002             |
| Pumps                           | 0.02    | 0.23            | < 0.005          | < 0.005           |
| Mobile                          | < 0.005 | < 0.005         | < 0.005          | < 0.005           |
| Total                           | 0.04    | 0.30            | 0.002            | 0.002             |
| Bay Area Air District Threshold | 10      | 10              | 15               | 10                |
| Exceeds Threshold?              | No      | No              | No               | No                |

As shown in Table 23 and Table 24, during normal operations the project would not exceed any of the significance thresholds for criteria air pollutants and would result in a less-than-significant impact with respect to criteria air pollutants.

**Impact AQ-4: The project's construction and operational activities would generate toxic air contaminants, including diesel particulate matter, but would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)**

As discussed above, a few project areas would be located within the air pollutant exposure zone where existing background health risks are substantial. The project would generate toxic air contaminants during construction from the use of diesel-powered construction equipment and on-road trucks, and during operations from the use of a diesel-powered generator and pumps. Depending on exposure, adverse health effects from toxic air contaminants can include birth defects, neurological damage, cancer, and mortality. The construction and operational health risks from the project's emissions are further analyzed below.



## Construction

According to the California Air Resources Board, off-road equipment, which includes construction equipment, was the third largest source of mobile particulate matter emissions in California in 2017, the latest year for which inventory data are available.<sup>93</sup>

However, a number of federal and state regulations require cleaner off-road equipment. Specifically, both the EPA and the California Air Resources Board have set emissions standards for new off-road equipment engines, ranging from *Tier 1* to *Tier 4*. Tier 1 emission standards were phased in between 1996 and 2000 and Tier 4 interim and final emission standards for all new engines were phased in between 2008 and 2015. Although the full benefits of these regulations will not be realized for several years, the EPA estimates that by implementing the federal Tier 4 standards, NO<sub>x</sub> and particulate matter emissions will be reduced by more than 90 percent.<sup>94</sup>

In addition, construction activities do not lend themselves to analysis of long-term health risks because of their temporary and variable nature. As explained in the Bay Area Air District's CEQA Air Quality Guidelines:

“Due to the variable nature of construction activity, the generation of toxic air contaminant emissions in most cases would be temporary, especially considering the short amount of time such equipment is typically within an influential distance that would result in the exposure of sensitive receptors to substantial concentrations. Concentrations of mobile-source diesel particulate matter emissions are typically reduced by 70 percent at a distance of approximately 500 feet. In addition, current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. This results in difficulties with producing accurate estimates of health risk.”<sup>95</sup>

Therefore, project-level analyses of construction activities have a tendency to produce overestimated assessments of long-term health risks. Furthermore, the San Francisco Environment Code section 25, known as the Clean Construction Ordinance, requires contractors on City public works projects to reduce diesel and other fine particulate emissions generated by construction activities. For all work performed on a major construction project located outside the air pollutant exposure zone, all contracts for large City projects (longer than 20 days) are required to use construction equipment that meet EPA Tier 2 standards or best available control technologies for equipment over 25 horsepower. However, within the air pollutant exposure zone, additional construction activity may adversely affect populations that are already at a higher risk for adverse long-term health risks from existing sources of air pollution. For projects located in an air pollutant exposure zone, equipment is subject to emission and idling standards, portable diesel engines are prohibited where access to electric power is available; and equipment must meet or exceed Tier 2 standards for off-road engines and operate with the most effective California Air Resources Board verified diesel emission control strategy available for the engine type (Tier 4 engines automatically meet this requirement).

Sensitive land uses near the project sites include residences (which are near or adjacent to a majority of the pipeline alignment and pump stations), schools, children's day care centers, hospitals, and nursing and convalescent homes.

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93 California Air Resources Board, 2017 Estimated Annual Average Emissions Statewide, <https://ww2.arb.ca.gov/applications/mobile-source-emissions>, Accessed December 9, 2024.

94 United States Environmental Protection Agency, “Clean Air Nonroad Diesel Rule: Fact Sheet,” May 2004.

95 Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017, page 8–7.nsn

The overall project would require an approximately 15-year construction period, with construction activities lasting on average 2 weeks at any one location along the pipeline alignment undergoing open-trench construction, approximately 3 to 9 months at any one location where soil improvements would occur, approximately 11 weeks at each roadway intersection crossing where trenchless pipeline construction would take place, and approximately 24 and 30 months for the construction of the new emergency pump stations 1 and 2, respectively. Project construction activities would result in short-term emissions of diesel particulate matter and other toxic air contaminants. However, as described above, where construction occurs within the air pollution exposure zone for 20 or more cumulative workdays, the Clean Construction Ordinance requires the use of the equivalent to Tier 4 engines, prohibits portable diesel engines where access to alternative sources of power is available, restricts equipment idling to two minutes, and requires contractors to properly maintain and tune their equipment in accordance with manufacturer specifications. The ordinance also requires the preparation of an initial construction emissions minimization plan and monitoring compliance of construction equipment through quarterly reports from the start of construction. Emission reductions from limiting idling, educating workers and the public, and properly maintaining equipment are difficult to quantify. Other measures in the Clean Construction Ordinance, specifically the requirement for equipment with Tier 4 engines, can reduce construction emissions by 89 to 94 percent compared to equipment with engines that do not meet any emission standards.<sup>96</sup>

Compliance with federal and state regulations that require cleaner off-road equipment, and compliance with the Clean Construction Ordinance would reduce construction period toxic air contaminant emissions on nearby sensitive receptors. Furthermore, construction activities would progress along the project area and would not occur in a single location for the entire 15-year construction period. Current models for conducting health risk assessments are associated with long-term exposure, whereas the project construction activities are expected to last less than 3 years next to any given sensitive receptor. Given the relatively short duration of construction; existing federal, state, and local regulations that require reductions in construction toxic air contaminants; and low levels of diesel particulate matter as a subset of PM<sub>2.5</sub> emissions (see Table 22) that the project would produce during construction, it was determined that a quantitative health risk analysis, comparing the project's emissions to the thresholds of significant in Table 21, would not be useful for understanding the potential for project construction activities to cause substantial pollution concentrations on nearby sensitive receptors. The project's emissions of PM<sub>2.5</sub>, including diesel particulate matter, are expected to be low (see Table 22), would be spread out across on-road and off-road sources, would be temporary at any given sensitive receptor, would be in compliance with federal and state regulations to reduce emissions, and the local Clean Construction Ordinance. Because a portion of the project would be subject to more stringent particulate matter controls for construction that lasts longer than 20 cumulative days within the air pollution exposure zone, construction emissions would

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96 Particulate matter emissions benefits are estimated by comparing off-road particulate matter emission standards for Tier 2 with Tier 1 and 0. Tier 0 off-road engines do not have particulate matter emission standards; however, the EPA's "Exhaust and Crankcase Emissions Factors for Nonroad Engine Modeling – Compression Ignition" has estimated that Tier 0 engines between 50 and 100 horsepower have a particulate matter emission factor of 0.72 grams/horsepower-hour (g/hp-hr), and those greater than 100 horsepower have a particulate matter emission factor of 0.40 g/hp-hr. Therefore, requiring off-road equipment to have at least a Tier 2 engine would result in a 25 to 63 percent reduction in particulate matter emissions compared to off-road equipment with Tier 0 or Tier 1 engines. The 25 percent reduction comes from comparing the particulate matter emission standards for off-road engines between 25 and 50 horsepower for Tier 2 (0.45 grams/break horsepower-hour [g/bhp-hr]) and Tier 1 (0.60 g/bhp-hr). The 63 percent reduction comes from comparing the particulate matter emission standards for off-road engines above 175 horsepower for Tier 2 (0.15 g/bhp-hr) and Tier 0 (0.40 g/bhp-hr). In addition to the Tier 2 requirement, California Air Resources Board level 3 VDECSs are required and would reduce particulate matter by an additional 85 percent. Therefore, the mitigation measure would result in a reduction in particulate matter emissions of 89 percent (0.0675 g/bhp-hr) to 94 percent (0.0225 g/bhp-hr) compared to equipment with Tier 1 (0.60 g/bhp-hr) or Tier 0 engines (0.40 g/bhp-hr).

be even lower than estimated in Table 22. The project's construction activities would have a less-than-significant impact regarding the exposure of sensitive receptors to toxic air contaminants.

## Operations

During operations, the project would generate emissions from mobile sources, and from exercising the diesel engine pumps and emergency generator. There would be approximately one vehicle trip per month for maintenance. The emissions modeling applied CalEEMod default trip lengths for vehicle maintenance trips (5.25-mile one-way trips), and employee maintenance trips were conservatively assumed to require two one-way trips per day. According to the modeling exercise, emissions of PM<sub>2.5</sub> from mobile sources would be negligible (see Table 23 and Table 24).

Exercise of diesel engine pumps and emergency generator would generate diesel particulate matter and PM<sub>2.5</sub>. Specifics of the six diesel engine pumps and one emergency generator, including horsepower, and the hours of operation per year were input manually as they were known quantities. Refer to **Appendix D** for detailed assumptions and results. According to the modeling exercise, emissions of PM<sub>2.5</sub> from exercising the diesel engine pumps would be negligible (see Table 23 and Table 24). The project would include a 3,300-horsepower diesel emergency generator at the Lake Merced Pump Station and up to three diesel engine pumps each, with a horsepower range of 1,000 to 1,500, at the two new emergency pump stations. The diesel pumps would be exercised approximately one hour per month (or a total of about 72 hours per year for all six pumps). The emergency generator would be exercised approximately 11 hours per year (i.e., once per month for about 15 minutes without load and exercised twice annually with full load for about 4 hours). Emergency generators are regulated by the Bay Area Air District through its New Source Review (regulation 2, rule 5) permitting process. The SFPUC would be required to obtain applicable permits from the Bay Area Air District to operate this emergency generator. Although the intent would be to use the emergency generator only in periods of power outages, monthly and annual testing of the generator would be required. The Bay Area Air District would limit this testing to no more than 50 hours per year. In addition, as part of the permitting process, the Bay Area Air District would limit the excess cancer risk from any facility to no more than 10 per 1 million population and would require any source that would result in an excess cancer risk greater than 1 per 1 million population to install best available control technology for toxics.

Emissions from emergency generator operations and their associated health risks were analyzed as part of the air quality analysis in the General Plan Housing Element EIR.<sup>97</sup> The analysis is summarized here to provide context for the assessment of the extremely low health risk associated with the project's infrequent use of emergency generator and pump engines. The Housing Element analyzed emissions from one generator with a 2,012 horsepower Tier 4 engine, two generators with 1,006 horsepower Tier 4 engines, one generator with 939 horsepower Tier 2 engine, and one generator with 939 horsepower Tier 4 engine. The Housing Element EIR analysis assumed each of the generators would operate for the maximum 50 hours per year allowed by the Bay Area Air District, which is more than the 11 hours per year that project generators would operate and 12 hours per year that each diesel pump would operate, and it evaluated generators with similar horsepower to the project generator and engine pumps. The emissions from operation of the backup generators analyzed in the Housing Element EIR were found to be below the screening thresholds of significance shown in Table 21, p. 133. Therefore, the Housing Element EIR analysis concluded that impacts of the generators would be less than significant. The project's emergency generator and diesel engine pumps would operate for fewer hours per year than the five backup generators evaluated in the Housing Element

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97 San Francisco Planning, San Francisco Housing Element 2022 Update, Appendix I Air Quality Supporting Information, April 2022.

EIR. Thus, it is reasonable to conclude that the project emissions from the emergency generator and diesel pump driver engines would not emit levels of toxic air contaminants that would cause a significant impact.

The Bay Area Air District's best available control technology guideline for diesel backup engines equal to or greater than 1,000-brake horsepower requires these engines to meet Tier 4 emissions standards.<sup>98</sup> Tier 4 emissions standards for generators of the size proposed would reduce particulate matter by 95 percent compared to Tier 1 emissions standards.<sup>99</sup> Compliance with the Bay Area Air District permitting process would ensure that the project's emergency diesel generator emissions would not expose sensitive receptors to substantial air pollutant concentrations.

In conclusion, operational emissions of diesel particulate matter would be relatively low, under non-emergency scenarios (see Table 23 and Table 24). Adherence to Bay Area Air District permitting requirements for stationary sources would ensure emissions of diesel particulate matter from the project's proposed emergency generator and pumps would not result in health impacts that exceed the significance thresholds shown in Table 21. Thus, while the project's construction and operational activities would generate toxic air contaminants, including diesel particulate matter, the project would not expose sensitive receptors to substantial pollutant concentrations and health risks would be less than significant.

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**Impact AQ-5: The proposed project would not create objectionable odors that would adversely affect a substantial number of people. (*Less than Significant*)**

Typical odor sources of concern include land uses such as wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing facilities, fiberglass manufacturing facilities, auto body shops, rendering plants, and coffee roasting facilities. The project would not build these types of facilities.

During project construction, diesel exhaust from equipment would generate some odors, which could increase odors temporarily in the immediate vicinity of the equipment being operated. However, construction-related odors would be temporary and would not persist after completion of construction. Operational activities, including exercising the emergency generator and pumps, would generate diesel exhaust that would generate odors. However, normal maintenance of the generator and pumps would only require the occasional exercise of the equipment and exhaust odors would dissipate quickly with distance. The project would not introduce a new land use that is typically a source of odor concern. Therefore, the project would not result in emissions of odors that could adversely affect a substantial number of people. As a result, the impact associated with odors would be less than significant. No mitigation would be required.

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98 Bay Area Air Quality Management District, Memorandum from Jack Broadbent, Executive Officer to Mr. Richard Corey, Executive Officer, California Air Resources Board and Mr. Drew Bohan, Executive Director, California Energy Commission, Re: BACT Determination for Diesel Back-up Engines Greater than or equal to 1,000 Brake Horsepower, December 21, 2020.

99 Particulate matter emissions from Tier 1 generators greater in size than 750 horsepower were limited to 0.4 g/bhp-hour and Tier 4 engines are limited to 0.02 g/bhp-hour, representing a 95 percent reduction in particulate matter emissions.

**Impact C-AQ-1: The proposed project, in combination with cumulative projects, would result in less-than-significant cumulative air quality impacts. (*Less than Significant*)**

As discussed above, regional air pollution generally is considered a cumulative impact. Emissions from past, present, and future projects contribute to the region's adverse air quality on a cumulative basis. No single project by itself would be sufficient in size to result in regional non-attainment of ambient air quality standards. Instead, a project's individual emissions would contribute to existing cumulative adverse air quality impacts.<sup>100</sup> The project-level thresholds for criteria air pollutants are based on levels below which new sources are not anticipated to result in a considerable net increase in non-attainment criteria air pollutants. Therefore, the cumulative criteria air pollutant analysis is presented in Impacts AQ-2 and AQ-3. The remainder of this cumulative air quality analysis addresses cumulative health risks and odors.

As discussed above, portions of the project overlay the air pollutant exposure zone where nearby sensitive receptors already experience poor air quality. This means significant air quality health risk impacts exist even without the proposed project in those areas. The cumulative projects in the vicinity, such as the Stonestown Development Project, Ocean Beach Climate Change Adaptation Project, St. Ignatius Academic Building Addition, SFPUC Westside Recycled Water Project, and Parkmerced Project, would result in additional emissions of toxic air contaminants, including diesel particulate matter emissions from new vehicle trips and other stationary emissions sources similar to the project's diesel generator emissions, as well as diesel emissions from construction activities, which could result in a significant cumulative health-risk impact.

As described in Impact AQ-4 above, the project's average daily vehicle trips (one trip per month) would be considered negligible and would not pose a significant health impact even in combination with other nearby sources. Additionally, stationary emissions sources like the proposed emergency generator are regulated by the Bay Area Air District through their New Source Review (regulation 2, rule 5) permitting process, which would ensure that toxic air contaminant emissions from stationary sources would not contribute considerably to significant cumulative health risk impacts. Additionally, the project is subject to the Clean Construction Ordinance, which would reduce construction particulate matter emissions by 89 to 94 percent compared to equipment with engines meeting no emission standards and without a California Air Resources Board verified diesel emission control strategy where work occurs in the air pollutant exposure zone.<sup>101</sup> Therefore, through compliance with the City's Clean Construction Ordinance and the Bay Area Air District's permitting regulations for diesel generators, the project would not result in a considerable contribution to cumulative health risks and cumulative air quality impacts would be less than significant. No mitigation is required.

The project and cumulative projects would generate some odors during construction from operating diesel equipment, but such odors would be temporary. Upon completion of construction activities, cumulative

100 Bay Area Air Quality Management District, 2022 CEQA Guidelines, April 20, 2022.

101 Particulate matter emissions benefits are estimated by comparing off-road particulate matter emission standards for Tier 2 with Tier 1 and 0. Tier 0 off-road engines do not have particulate matter emission standards; however, the EPA's "Exhaust and Crankcase Emissions Factors for Nonroad Engine Modeling – Compression Ignition" has estimated that Tier 0 engines between 50 and 100 horsepower have a particulate matter emission factor of 0.72 g/hp-hr, and those greater than 100 horsepower have a particulate matter emission factor of 0.40 g/hp-hr. Therefore, requiring off-road equipment to have at least a Tier 2 engine would result in a 25 to 63 percent reduction in particulate matter emissions compared to off-road equipment with Tier 0 or Tier 1 engines. The 25 percent reduction comes from comparing the particulate matter emission standards for off-road engines between 25 and 50 horsepower for Tier 2 (0.45 g/bhp-hr) and Tier 1 (0.60 g/bhp-hr). The 63 percent reduction comes from comparing the particulate matter emission standards for off-road engines above 175 horsepower for Tier 2 (0.15 g/bhp-hr) and Tier 0 (0.40 g/bhp-hr). In addition to the Tier 2 requirement, California Air Resources Board level 3 VDECSs are required and would reduce particulate matter by an additional 85 percent. Therefore, the mitigation measure would result in a reduction in particulate matter emissions of 89 percent (0.0675 g/bhp-hr) to 94 percent (0.0225 g/bhp-hr) compared to equipment with Tier 1 (0.60 g/bhp-hr) or Tier 0 engines (0.40 g/bhp-hr).



projects combined with the project would not generate substantial odors. Therefore, a significant cumulative odor impact would not result. No mitigation is required.

## E.9 Greenhouse Gas Emissions

| Topics:                                                                                                                           | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>GREENHOUSE GAS EMISSIONS.</b> Would the project:                                                                               |                                |                                                    |                                     |                          |                          |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?       | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

GHG emissions and global climate change represent cumulative impacts in that GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; rather, the combination of GHG emissions from past, present, and future projects have contributed and will continue to contribute to global climate change and its associated environmental impacts. For this reason, the analysis of the project's impact on climate change focuses on the project's contribution to cumulatively significant GHG emissions; this section does not include an individual, project-specific impact statement.

On April 20, 2022, the Bay Area Air District adopted updated GHG thresholds.<sup>102</sup> Consistent with CEQA Guidelines sections 15064.4 and 15183.5, which address the analysis and determination of significant impacts from a project's GHG emissions, the updated thresholds for land use projects, such as the proposed project, maintain the Bay Area Air District's previous GHG threshold, which allows projects that are consistent with a GHG reduction strategy to conclude that those project's GHG impacts are less than significant. Land use projects as defined by the Bay Area Air District include public facilities such as the project.

San Francisco's 2023 GHG Reduction Strategy Update<sup>103</sup> presents a comprehensive assessment of policies, programs, and ordinances that collectively represent San Francisco's GHG reduction strategy in compliance with the Bay Area Air District's guidelines and CEQA Guidelines. These GHG reduction actions have resulted in a 48 percent reduction in GHG emissions by 2022, compared to 1990 levels,<sup>104</sup> which far exceeds the goal of

102 Bay Area Air Quality Management District, 2022 CEQA Thresholds and Guidelines Update, <https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines>, accessed September 23, 2024.

103 San Francisco Planning Department, 2023 Greenhouse Gas Reduction Strategy Update, October 2023, <https://sfplanning.org/project/greenhouse-gas-reduction-strategies>, accessed September 23, 2024.

104 San Francisco Department of the Environment, San Francisco's Carbon Footprint, <https://sfenvironment.org/carbonfootprint>, accessed September 23, 2024.

2020 GHG emissions equaling those in 1990, set in Executive Order S-3-05<sup>105</sup> and the California Global Warming Solutions Act.<sup>106</sup> The City has also met and exceeded the 2030 target of 40 percent reduction below 1990 levels, set in the California Global Warming Solutions Act of 2016<sup>107</sup> and the Bay Area Air District's 2017 Clean Air Plan,<sup>108</sup> more than 10 years before the target date.

San Francisco's GHG reduction goals, updated in July 2021 by Ordinance 117-02,<sup>109</sup> are consistent with or more aggressive than the long-term goals established under Executive Orders S-3-05,<sup>110</sup> B-30-15,<sup>111</sup> and B-55-18,<sup>112</sup> the California Global Warming Solutions Act of 2016.<sup>113</sup> The updated GHG ordinance demonstrates the City's commitment to continued GHG reductions by establishing targets for 2030, 2040, and 2050, and setting other critical sustainability goals. In particular, the updated ordinance sets a goal to reach net-zero sector-based GHG emissions by 2040 and sequester any residual emissions using nature-based solutions.<sup>114</sup> Thus, the City's GHG reduction goal is consistent with the state's long-term goal of reaching carbon neutrality by 2045. The updated GHG ordinance required that the San Francisco Department of the Environment prepare and submit to the mayor a climate action plan by December 31, 2021. The climate action plan, which was released on December 8, 2021, and will be updated every five years, carries forward the efforts of the City's previous climate action plans and charts a path toward meeting the GHG commitments of the Paris Agreement (e.g., limit global warming to 1.5 degrees Celsius) as well as the reduction targets adopted in the GHG ordinance.

In summary, the CEQA Guidelines and Bay Area Air District-adopted GHG thresholds allow projects consistent with an adopted GHG reduction strategy to determine a less-than-significant GHG impact. San Francisco has a GHG reduction strategy that is consistent with near- and long-term state and regional GHG reduction goals and is effective because the City has demonstrated its ability to meet state and regional GHG goals in advance of target dates. Therefore, projects that are consistent with San Francisco's GHG reduction strategy

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105 Office of the Governor, Executive Order S-3-05, June 1, 2005, <https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/5129-5130.pdf>, accessed September 23, 2024.

106 California Legislative Information, Assembly Bill 32, September 27, 2006, [http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab\\_0001-0050/ab\\_32\\_bill\\_20060927\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf), accessed September 23, 2024.

107 California Legislative Information, Senate Bill 32, September 8, 2016, [https://leginfo.ca.gov/faces/billPdf.xhtml?bill\\_id=201520160SB32&version=20150SB3288CHP](https://leginfo.ca.gov/faces/billPdf.xhtml?bill_id=201520160SB32&version=20150SB3288CHP), accessed September 23, 2024.

108 Bay Area Air Quality Management District, Spare the Air Cool the Climate, Final 2017 Clean Air Plan, April 19, 2017, <https://www.baaqmd.gov/en/plans-and-climate/air-quality-plans/current-plans>, accessed September 25, 2024.

109 San Francisco Board of Supervisors, Ordinance 117-21, July 20, 2021, File No. 210563, <https://sfbos.org/sites/default/files/o0117-21.pdf>, accessed August 16, 2022. San Francisco's GHG reduction goals are codified in Section 902(a) of the Environment Code and include the following goals: (1) by 2030, a reduction in sector-based GHG emissions of at least 61 percent below 1990 levels; (2) by 2030, a reduction in consumption-based GHG emissions equivalent to a 40 percent reduction compared to 1990 levels; (3) by 2040, achievement of net zero sector-based GHG emissions by reducing such emissions by at least 90 percent compared to 1990 levels and sequestering any residual emissions; and (4) by 2050, a reduction in consumption-based GHG emissions equivalent to an 80 percent reduction compared to 1990 levels.

110 Executive Order S-3-05 sets forth a goal of an 80 percent reduction in GHG emissions by 2050. San Francisco's goal of net zero sector-based emissions by 2040 requires a greater reduction of GHG emissions.

111 Office of the Governor, Executive Order B-30-15, April 29, 2015, <https://www.ca.gov/archive/gov39/2015/04/29/news18938/>, accessed September 23, 2024. Executive order B-30-15 sets a state GHG emissions reduction goal of 40 percent below 1990 levels by 2030. San Francisco's 2030 sector-based GHG reduction goal of 61 percent below 1990 levels requires a greater reduction of GHG emissions.

112 Office of the Governor, Executive Order B-55-18, September 18, 2018, <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>, accessed September 23, 2024. Executive order B-55-18 establishes a statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and achieving and maintaining net negative emissions thereafter. San Francisco's goal of net zero sector-based emissions by 2040 is a similar goal, but requires the target to be reached 5 years earlier.

113 Senate Bill 32 amends California Health and Safety Code Division 25.5 (also known as the California Global Warming Solutions Act of 2006), by adding section 38566, which directs that statewide GHG emissions be reduced by 40 percent below 1990 levels by 2030. San Francisco's 2030 sector-based GHG reduction goal of 61 percent below 1990 levels requires a greater reduction of GHG emissions.

114 Nature-based solutions are those that remove remaining emissions from the atmosphere by storing them in natural systems that support soil fertility or employing other carbon farming practices.

would not result in GHG emissions that would have a significant effect on the environment, and would not conflict with state, regional, or local GHG reduction plans and regulations.

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**Impact C-GG-1: The proposed project would generate GHG emissions, but not at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for reducing GHG emissions. (*Less than Significant*)**

The project would require energy and fuel consumption by heavy construction equipment, trucks, and worker vehicles during its multi-year construction. Net new operational fuel consumption would result from exercising the new diesel engine pumps and emergency generator under normal operating conditions.

Thus, the project would contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction and operation. Direct construction effects from the project include the GHG emissions from off-road construction equipment and on-road vehicles. Direct operational effects from the project include the GHG emissions from new diesel engine pumps during routine maintenance. Indirect construction and operational effects include the GHG emissions from electricity providers to serve the project's electric construction equipment, signage, and/or lights. Other GHG emissions associated with operational water use, waste removal, waste disposal, and landfill operations would be negligible compared to current conditions.

The project would be subject to regulations adopted to reduce GHG emissions as identified in the GHG reduction strategy and as demonstrated in the GHG checklist completed for the project.<sup>115</sup> For example, the project would comply with the City's Clean Construction Ordinance; Construction and Demolition Debris Recovery Ordinance; Resource Conservation Ordinance; Mandatory Recycling and Composting Ordinance; Urban Forestry Ordinance; Site Runoff Ordinance; Stormwater Management Ordinance; and Environmentally Preferable Purchasing Ordinance.

In addition, the project would comply with other applicable regulations that would reduce the project's GHG emissions related to energy use and waste disposal. As discussed above, these regulations have proved effective as San Francisco has reduced its GHG emissions by 48 percent below 1990 levels, which far exceed statewide and regional 2020 GHG reduction targets. Furthermore, the City's GHG emission reductions also met statewide and regional 2030 targets more than 10 years in advance of the target year. Because the project would be subject to regulations adopted to reduce GHG emissions, the project would be consistent with San Francisco's GHG reduction strategy and would not generate significant GHG emissions nor conflict with state, regional, and local GHG reduction plans and regulations.

Therefore, because the project would be consistent with the City's GHG reduction strategy as well as the Bay Area Air District's performance criteria related to GHGs, it would also be consistent with the GHG reduction goals of executive orders S-3-05, B-30-15, B-55-18, California Global Warming Solutions Act of 2016, and the clean air plan, would not conflict with these plans. As such, the project would not make a cumulatively considerable contribution to a significant GHG cumulative impact and impacts would be less than significant. No mitigation would be required.

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115 San Francisco Planning Department, Greenhouse Gas Analysis: Compliance Checklist for 2023-005928ENV.

## E.10 Wind

| Topics:                                                                            | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with<br>Mitigation<br>Incorporated | Less than<br>Significant<br>Impact  | No<br>Impact             | Not<br>Applicable        |
|------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>WIND.</b> Would the project:                                                    |                                      |                                                                |                                     |                          |                          |
| a) Create wind hazards in publicly accessible areas of substantial pedestrian use? | <input type="checkbox"/>             | <input type="checkbox"/>                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Impact WI-1: The proposed project would not create wind hazards in publicly accessible areas of substantial pedestrian use. (*Less than Significant*)

A project's wind impacts are related directly to its height, orientation, design, location, and surrounding development context. Based on wind analyses for infill development projects in San Francisco, a building that does not exceed a height of 85 feet generally has little potential to cause substantial changes in ground-level wind conditions.

The project would not construct facilities exceeding 85 feet in height. The tallest structures that would be constructed would be the new pump stations, which would be approximately 27 feet in height. Upgrades at the existing Lake Merced Pump Station would improve pump operation and electrical and communication systems without altering the heights of the existing buildings. Small structures such as cabinets and hydrants would have no effect on wind.

Given the heights of the proposed facilities and within the context of surrounding development that is typically two stories or less (with some exceptions), the project would not cause substantial changes to ground-level wind conditions around the pipeline alignment or at pump station sites. Therefore, the project would not create wind hazards in publicly accessible areas of substantial pedestrian use, resulting in a less-than-significant impact relative to wind hazards. No mitigation would be required.

### Impact C-WI-1: The proposed project, combined with cumulative projects, would not result in significant cumulative impacts related to wind. (*No Impact*)

The geographic scope for assessing cumulative wind impacts would be local and limited to the immediate project vicinity. Cumulative development projects that are within approximately 0.25 miles of the project area are listed in Section B, Project Setting. Those that would involve buildings over 85 feet tall that could contribute to wind impacts include the Stonestown Development Project and Parkmerced Project. Significant cumulative wind impacts could occur if the project, in combination with cumulative projects, would combine to result in the creation of wind hazards in publicly accessible areas of substantial pedestrian use.

The Parkmerced Project would entail the construction of new buildings ranging from 35 to 145 feet, and would be no taller than the existing towers, potentially leading to significant wind impacts in some areas during construction. The Stonestown Development Project proposes height increases from 40 to 90 feet,

with some parcels potentially reaching up to 190 feet. This height increase could create wind hazards in public areas at full buildout. Cumulative projects could thus have a significant cumulative wind impact.

However, as discussed in Impact WI-1, the project would not alter wind by blocking or redirecting wind in a way that could create wind hazards in any publicly accessible areas. The project does not entail construction of buildings that would be tall enough or close enough to the Parkmerced or Stonestown Development projects to combine with those projects to create a significant cumulative wind hazard. Therefore, the project would not contribute to any potentially significant cumulative impact associated with wind (no impact).

## E.11 Shadow

| Topics:                                                                                                                 | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|-------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>SHADOW.</b> Would the project:                                                                                       |                                |                                                    |                                     |                          |                          |
| a) Create new shadow that substantially and adversely affects the use and enjoyment of publicly accessible open spaces? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Impact SH-1: The proposed project would not create new shadow that substantially and adversely affects the use and enjoyment of publicly accessible open spaces. (*Less than Significant*)

Section 295 of the planning code, the Sunlight Ordinance, was adopted in 1984 following voter approval of Proposition K to protect certain public open spaces from shadowing new structures. The ordinance generally prohibits structures greater than 40 feet in height that would cast additional shadows on property under the jurisdiction of the San Francisco Recreation and Parks Department from 1 hour after sunrise until 1 hour before sunset. This ordinance applies any time during the year unless the San Francisco Recreation and Park Commission determines that the shadow would not have an adverse effect on the use of such property.

The project would not include any new buildings or structures more than 40 feet tall. The new pump stations would be approximately 27 feet tall and, therefore, not subject to the Sunlight Ordinance.

The nearest public open space to the Lake Merced Pump Station is Lake Merced Park, located adjacent to the project area. Additional facilities near the project area that are subject to the ordinance include Lincoln Park and Golf Course; Ocean Beach; Golden Gate Park; Golden Gate Park Golf Course; West Sunset Playground, baseball fields, and soccer fields; Stern Grove; and Pine Lake Park. For the proposed pump station 1, Stern Grove is the closest open space managed by the Recreation and Parks Department, situated 200 feet north of the site. The preferred location of pump station 2, along 24th Avenue near Pacheco Street, is within open space at Sunset Reservoir that is informally used as a park however, this space is not subject to the ordinance. The proposed pump stations would not cast substantial shadows on public open space. Therefore, the project would not create new shadows that would substantially and adversely affect the use



and enjoyment of publicly accessible open spaces. As a result, the shadow impact would be less than significant. No mitigation would be required.

**Impact C-SH-1: The proposed project, combined with cumulative projects, would not result in significant cumulative impacts related to shadow. (*Less than Significant*)**

The geographic scope for assessing cumulative shadow impacts would be local and limited to the immediate project vicinity. Cumulative development projects that are within approximately 0.25 miles of the project area are listed in Section B, Project Setting. Those that would involve buildings over 40 feet tall that could contribute to cumulative shadow impacts include the Stonestown Development Project and Parkmerced Project. Significant cumulative shadow impacts could occur if the proposed project, in combination with cumulative projects, would combine to create shadows on publicly accessible areas.

Because the new emergency pump stations are not located near the Stonestown or Parkmerced projects, the project's shadow would not combine with shadow from other projects and would not contribute to any potential cumulative impact associated with shadow (less than significant).

## E.12 Recreation

| Topics:                                                                                                                                                                                        | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                           | Not Applicable           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|-------------------------------------|--------------------------|
| <b>RECREATION.</b> Would the project:                                                                                                                                                          |                                |                                                    |                              |                                     |                          |
| a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?                          | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

The following parks and other recreational facilities are located adjacent to the project work areas: Lincoln Park and Golf Course; Golden Gate Park; West Sunset Playground; Stern Grove; Pine Lake Park; Tournament Players Club (TPC) Harding Park Golf Course; and TPC Fleming Golf Course.

**Impact RE-1: The proposed project would not increase the use of existing neighborhood and regional parks and other recreational facilities, to such an extent that substantial physical deterioration of the facilities would occur or be accelerated. (*No Impact*)**

As discussed in Section E.3, Population and Housing, the project would not induce substantial population growth. The project would not increase existing operations staff levels; therefore, demand for use of existing

recreational facilities near the project sites would not change. Ongoing demand for recreational facilities would continue to be met by existing parks and recreational facilities. In addition, the project is not expected to induce population growth that would in turn generate new recreational demand. Therefore, the project would not increase use of the existing parks or other recreational facilities such that physical deterioration of the facilities would occur or be accelerated. The project would not construct new housing or other uses that would generate an increased demand for parks and recreational facilities. The project would therefore not cause substantial physical deterioration of park facilities, and there would be no impact.

**Impact RE-2: The proposed project would not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. (No Impact)**

The project does not propose new recreational facilities or require construction of new facilities. Therefore, the project would not result in adverse physical effects from the construction of new recreational facilities or expansion of existing facilities. No impact would occur.

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**Impact C-RE-1: The proposed project, combined with cumulative projects, would not result in significant cumulative impacts related to recreation. (No Impact)**

As discussed above, the project would not generate or accommodate growth and consequently would not result in increased use or physical deterioration of recreational facilities or require construction of new facilities. Therefore, the project would have no impact and would not contribute to any potential cumulative impact on recreation.

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### E.13 Utilities and Service Systems

| Topics:                                                                                                                                                                                                                                                                                | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| <b>UTILITIES AND SERVICE SYSTEMS.</b> Would the project:                                                                                                                                                                                                                               |                                |                                                    |                                     |                          |                                     |
| a) Require or result in the relocation or construction of new or expanded, water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?                                                                                                                             | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?                                                    | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?                                                                                                | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?                                                                                                                                                                     | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

The project involves the construction of facilities intended to provide both resilient firefighting water and potable water supply redundancy in western San Francisco. The new pipeline and pump stations would not result in an expansion of the existing water system capacity. Existing utilities may require relocation or realignment to avoid potential conflicts with the project; these adjustments would be coordinated with the appropriate utility providers as part of project implementation. The environmental impacts of construction and operation of the proposed water system infrastructure are addressed in this initial study. This section addresses impacts on other utilities and service systems that would result from the project.

The majority of the city as well as the project area is served by the City's combined sewer system, which collects and treats both stormwater and wastewater. However, a small portion of the project area at the Lake Merced Pump Station is part of the City's separate sewer system. Different construction stormwater requirements could apply to areas outside of the city's combined sewer system as described in Section E.17, Hydrology and Water Quality.

The project would not involve new housing development, a substantial increase in population, or substantially alter the manner in which the water system operates. Project construction would entail minimal amounts of water usage and wastewater generation; project operation would not entail additional water usage or wastewater generation. Therefore, topics 13(b) and (c) are not applicable to the project and are not discussed below.

**Impact UT-1: The proposed project would not require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electrical power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. (*Less than Significant*)**

### ***Water Supply***

Project construction would require a limited amount of potable water for worker consumption, on-site sanitary needs, and concrete slurry mixing. Water would also be used during pipeline shutdown, testing of new pipelines and startup dewatering of pipelines. Recycled water would be used for dust suppression and soil compaction, in compliance with San Francisco Public Works Code article 21. As described above, the SFPUC plans to open a new recycled water truck-fill station at the Southeast Water Pollution Control Plant that will provide recycled water for these activities. The limited amount of water required for construction, including for dust control, would not require the construction of new or expanded water facilities. As such, the project would not require additional potable water infrastructure that could cause significant environmental effects. Impact would be less than significant. No mitigation would be required.

### ***Wastewater and Stormwater***

Project construction could require dewatering excavated trenches where shallow groundwater and/or rainwater is present, and water from dewatering would be discharged to the local combined sewer system in accordance with an SFPUC Batch Wastewater Discharge Permit. Additionally, construction personnel may use existing bathrooms at the SFPUC facilities. This dewatering water and wastewater generated during construction would constitute a negligible input to the combined sewer system and would not require new or expanded wastewater facilities.

Project construction would increase impervious surfaces as a result of construction of the 5,200-square-foot pump station 1 and the 11,250-square-foot pump station 2 and could thus result in additional stormwater discharge to local storm drainage facilities. Because the project would construct more than 5,000 square feet of impervious surface, it would be required to comply with the City's stormwater management ordinance (Ordinance 83-10) and the 2016 SFPUC Stormwater Management Requirements and Design Guidelines.<sup>116</sup> The ordinance, requirements, and guidelines require that the project be designed in a manner that reduces or eliminates the volume and rate of stormwater runoff discharged from the project sites. As required by the SFPUC's Stormwater Management Requirements and Design Guidelines, the project's stormwater management system would be designed and installed to retain runoff onsite and limit site discharges from entering the City's combined sewer system. As a result, the project would not require relocation, construction, or expansion of wastewater treatment or stormwater drainage facilities. The impact related to the relocation or construction of new or expanded wastewater or stormwater drainage facilities would therefore be less than significant. No mitigation would be required.

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116 San Francisco Public Utilities Commission, San Francisco Stormwater Management Requirements and Design Guidelines, Urban Watershed Management Program, May 2016, <https://www.sfport.com/node/5558>, accessed December 9, 2024.

### ***Electrical Power, Natural Gas, and Telecommunications***

The project would not require new sources of electricity, and the project is designed to have minimal power demand in either normal or emergency situations. Given that the project would be constructed and operated in a developed, urban area, there would be no need for new electricity, natural gas, or telecommunications infrastructure. The project area is already served by the necessary electrical, gas, and telecommunications infrastructure such that no new, expanded, or relocated infrastructure would be needed to serve the project.

Electrical power to the pump station buildings for lighting and electrical controls would be supplied by PG&E. Project operation would not result in a substantial increase in SFPUC's electrical use because the emergency pumps and new generator would be diesel-powered and electricity would only be needed for controls, instrumentation, lighting, and heating, venting, air conditioning, which have low electrical demand and would only be operated as needed. New utility connections would be installed for the new pump stations, but this would not represent a substantial increase in the demand and the low power demand would not require additional off-site infrastructure.

As a result, the utilities demand associated with the project would not require the relocation, construction, or expansion of electricity, natural gas, or telecommunications infrastructure, which could cause significant environmental effects. Therefore, the impact would be less than significant. No mitigation would be required.

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### **Impact UT-2: The proposed project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. (*Less than Significant*)**

In June 2024, the City of San Francisco extended an agreement with Recology for transport and disposal of municipal solid waste at Recology's Hay Road Landfill in Solano County. Under this agreement, disposal of municipal solid waste will continue through June 2030, or until 5 million tons have been disposed, whichever occurs first.<sup>117</sup> The Recology Hay Road Landfill is permitted to accept up to 2,400 tons of solid waste per day. At that maximum permitted rate, the landfill has the capacity to accommodate solid waste until approximately 2034. Under existing conditions, the landfill receives an average of approximately 1,850 tons of solid waste per day from all sources, with approximately 1,200 tons of solid waste per day from San Francisco, which includes residential and commercial waste and demolition and construction debris that cannot be reused or recycled.<sup>118</sup> At the current rate of disposal, the landfill has operating capacity until 2041. At the end of the current contract with Recology, the City either will need to extend the landfill contract again or find and entitle an alternative landfill site. Recology does not accept hazardous waste or sediment for disposal. The Corinda Los Trancos Landfill in Half Moon Bay is estimated to have 18.2 million cubic yards of remaining capacity to accept solid waste, and has operating capacity until 2039.<sup>119</sup> The closest Class I landfill

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117 City and County of San Francisco, Resolution Authorizing the Director to Execute an Extension of the Current Landfill Disposal Agreement with Recology San Francisco, June 24, 2024.

118 San Francisco Planning Department, Disposal of San Francisco Municipal Waste at Recology Hay Road Landfill in Solano County. Final Negative Declaration, Planning Department Case No. 2014.053, May 21, 2015.

119 Republic Services. Report of Landfill Activity Corinda Los Trancos Landfill. July 16, 2019. Available at <https://www.smcsustainability.org/wp-content/uploads/Ox-Landfill-Capacity.pdf>. Accessed April 1, 2025



for hazardous waste, Kettleman Hills Landfill, has a remaining capacity of 2.7 million cubic yards and would have available capacity until 2043.<sup>120</sup>

## Construction

Overall, approximately 261,000 cubic yards of demolition debris, including concrete/asphalt pavement, and soils would be removed for the project. Any excavated soils classified as hazardous waste would be trucked directly to a hazardous waste (class I) disposal facility or to the Port of San Francisco transfer facility at Cargo Way for rail transport to such a facility. Any nonhazardous sediment that is not reused as backfill would go to the Altamont Landfill in Livermore, while uncontaminated debris would be taken to either the Recology Hay Road Landfill in Solano County or the Corinda Los Trancos Landfill in Half Moon Bay. As discussed above, these landfills have available capacity for the project's solid waste. The project also would be required to comply with the City of San Francisco's Construction and Demolition Debris Recovery Ordinance 27-06. This ordinance requires submitting to the San Francisco Department of the Environment a waste diversion plan that provides for a minimum of 65 percent diversion from landfill of construction and demolition debris, and source separation for reuse or recycling.

## Operation

Operation of the project would only generate a limited amount of solid waste, such as from replacing equipment parts, consistent with operation of existing SFPUC facilities.

As a result, during construction and operation, the project would not generate solid waste in excess of state or local statutes and regulations or the capacity of local landfill infrastructure. The impact relative to solid waste would be less than significant. No mitigation would be required.

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### **Impact UT-3: The proposed project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. (*Less than Significant*)**

San Francisco introduced its *Advancing Towards Zero Waste Declaration* in 2018, which aims to reduce municipal solid waste by 15 percent and reduce landfill disposal by 50 percent by 2030.<sup>121</sup> As described under Impact UT-2, the project would be required to comply with the City's Construction and Demolition Debris Recovery Ordinance 27-06 and the Mandatory Recycling and Composting Ordinance 100-09, which would support San Francisco's zero waste goals. In addition, the Altamont Landfill in Livermore is permitted to accept the types of non-hazardous waste that would be generated by the project. If any hazardous waste is encountered, it would be disposed of in accordance with all applicable regulations at a class I hazardous waste disposal facility in Kern County. As a result, project construction and operation would comply with all federal, state, and local requirements and regulations related to solid waste, including the California Integrated Waste Management Act of 1989 (Assembly Bill 939). The impact relative to solid waste reduction would therefore be less than significant. No mitigation would be required.

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120 Department of Toxic Substances Control, Draft Hazardous Waste Management Report. Available at [https://dtsc.ca.gov/wp-content/uploads/sites/31/2023/07/Hazardous-Waste-Management-Report\\_Section-3\\_accessible.pdf](https://dtsc.ca.gov/wp-content/uploads/sites/31/2023/07/Hazardous-Waste-Management-Report_Section-3_accessible.pdf) Accessed on April 1, 2025.

121 C40 Cities, Advancing Towards Zero Waste Declaration, August 28, 2018, <https://www.c40.org/news/global-cities-and-regions-advance-towards-zero-waste/>, accessed December 9, 2024.

**Impact C-UT-1: The proposed project, in combination with cumulative projects, would not result in significant cumulative impacts on utilities and service systems. (*Less than Significant*)**

The geographic scope of cumulative impacts on water, wastewater treatment, and stormwater drainage facilities encompasses the Westside Drainage Basin. The geographic scope of cumulative impacts on electric power, natural gas, and telecommunication infrastructure includes the Outer Richmond, Outer Sunset, and Parkside neighborhoods, and part of the Lakeshore neighborhood. The geographic scope of cumulative impacts on solid waste includes the capacities of the Recology Hay Road Landfill in Solano County, Altamont Landfill in Livermore, the Corinda Los Trancos Landfill in Half Moon Bay, or – for construction related hazardous waste – the Kettleman Hills Landfill in Kern County. All of the cumulative projects listed in Section B.2 are within the Westside Drainage Basin and within the Outer Richmond, Outer Sunset, Parkside or Lakeshore neighborhoods. Municipal solid waste from the city is disposed of at the Hay Road Landfill, so all of the cumulative projects would be expected to dispose of municipal solid waste there while construction debris from all cumulative projects would likely be disposed of at the Altamont or Corinda Los Trancos landfills.

***Water Supply***

As discussed above, the project would not generate demand for water supply, except for minor water demand during construction, thus the project would not contribute considerably to any cumulative environmental impact related to water supply (less than significant impact). No mitigation would be required.

***Wastewater and Stormwater***

The City's combined sewer system and treatment facilities are designed to accept both wastewater and stormwater flows. All reasonably foreseeable projects in the drainage basin would be required to comply with San Francisco regulations regarding stormwater generation. Permit requirements would ensure that discharges to the combined sewer system would not exceed the volume or treatment requirements of the Oceanside Plant, which treats wastewater and stormwater in Western San Francisco. As a result, cumulative projects would not result in a significant cumulative impact on wastewater or stormwater drainage facilities (less than significant impact). No mitigation would be required.

***Electric Power, Natural Gas, and Telecommunication***

The identified cumulative projects within this geographic scope would be constructed and operated in a developed urban area with existing electric power, natural gas, and telecommunication infrastructure. As a result, the identified cumulative projects would not result in the need for new, expanded, or relocated infrastructure to be constructed to serve the Outer Richmond, Outer Sunset, Parkside neighborhoods, or Lakeshore neighborhoods. Consequently, the identified cumulative projects would not combine to create a significant cumulative impact related to these utilities (less than significant impact). Thus, the identified cumulative projects would not combine to create a significant cumulative impact related to these utilities (less than significant impact).

During construction, the proposed project and other cumulative projects could necessitate relocation of electric power, natural gas, or telecommunications facilities during excavation. Relocation of affected utilities, if necessary, would be site-specific and would not combine to result in a cumulative environmental impact. No mitigation would be required.

***Solid Waste***

The identified cumulative projects would generate construction and household waste, which would be disposed of at off-site disposal facilities. All projects would be required to comply with San Francisco’s construction and demolition debris recovery/recycling and composting ordinances. Given that the identified cumulative projects would comply with these ordinances and given that (as discussed above) adequate landfill capacity exists to serve the area in which these projects would be located, no significant cumulative impact relative to solid waste disposal would result (less than significant impact). No mitigation would be required.

## E.14 Public Services

| Topics:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                           | Not Applicable           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|-------------------------------------|--------------------------|
| <b>PUBLIC SERVICES.</b> Would the project:                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                                                    |                              |                                     |                          |
| a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically 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 such as fire protection, police protection, schools, parks, or other public facilities? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Impact PS-1: The proposed project would not increase the demand for public services to such an extent that construction of new or physically altered facilities would be required. (No Impact)**

The San Francisco Police and Fire Departments provide emergency services in the project area, which spans the Outer Richmond, Outer Sunset, Parkside, and part of the Lakeshore neighborhoods. The nearest police stations are Richmond Station in Outer Richmond and Taraval Station serving the Outer Sunset, Parkside, and Lakeshore neighborhoods. The project area receives fire protection and emergency medical services from the fire department. The nearest fire stations are Station 14 at 551 26th Avenue, Station 18 at 1935 32nd Avenue, Station 19 at 390 Buckingham Way, Station 22 at 1290 16th Avenue, Station 23 at 1348 45th Avenue, Station 34 at 499 41st Avenue, and Station 40 at 2155 18th Avenue.

### Construction

Incidents requiring law enforcement, fire protection, or emergency medical services could occur during project construction. Responding to such incidents is routine for the police and fire departments because construction projects are common and ongoing. Any incremental increase in demand for law enforcement, fire protection, or emergency medical services during construction would be temporary and would not

require construction of new or physically altered facilities to maintain the ratio of service providers to population.

As discussed under Impact PH-1 in Section E.3, Population and Housing, project construction workers who do not live in the project vicinity would most likely commute from elsewhere in the region rather than relocate from more distant cities or towns and would not cause substantial population growth in the area. Therefore, construction of the project would not result in the need for new or expanded schools, parks, or other public facilities due to relocation of construction workers.

As a result, there would be no construction impacts related to providing new or altered public services. No mitigation would be required.

## Operation

Project components would be designed in accordance with all applicable fire codes and public safety standards, including SFPUC seismic design requirements.<sup>122</sup> As such, typical operations of new facilities would not require elevated levels of emergency response from emergency service providers, and would not require construction of new or physically altered facilities to maintain service ratios. The project would include a water conveyance system for fire protection which would improve this public service, and the impacts of which are analyzed as part of this initial study. As such, the project would not require additional fire protection infrastructure that could cause significant environmental effects. There would be no impact.

The project would not develop new housing or employment that would generate population growth in the area. Existing SFPUC personnel would operate the electrical system and maintain the pipelines and appurtenances, and thus operations would not be expected to induce population growth. Therefore, the project would not cause an increase in the demand for existing schools that would affect school enrollment or performance objectives and would not result in the need for new or expanded parks. The project would not generate increased demand for police, fire or emergency medical services. The project would have no impact related to the provision of new or altered schools and recreational facilities. No mitigation would be required.

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**Impact C-PS-1: The proposed project, combined with cumulative projects, would not result in significant cumulative impacts on police, fire, and school district services such that new or physically altered facilities, the construction of which could cause significant environmental impacts, would be required in order to maintain acceptable levels of service. (No Impact)**

As discussed above, construction and operation of the project would not result in impacts on police, fire or school district services and would not require construction of new or physically altered facilities. Therefore, the project would have no impact and would not contribute to a cumulative impact on public services.

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122 San Francisco Public Utilities Commission, General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities, June 2014.

## E.15 Biological Resources

| Topics:                                                                                                                                                                                                                                                                                                              | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                           | Not Applicable                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <b>BIOLOGICAL RESOURCES.</b> 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? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 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 Wildlife or U.S. Fish and Wildlife Service?                                                               | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c) Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?                                                                                                  | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 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?                                                                                   | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                                  | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 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?                                                                                                                                 | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

This section provides an overview of existing biological resources in or adjacent to the project based on queries from the California Natural Diversity Database and the U.S. Fish and Wildlife Service Information for Planning and Consultation database, as well as a desktop review using aerial imagery (Google Earth) and a targeted survey of relevant portions of the project area. According to database searches, no critical habitat for any species is present within the project area. Sensitive plant and wildlife species assessed for potential to occur in the project area based on the database searches are listed in **Appendix E**. The project sites are developed and located entirely within existing city streets, existing SFPUC facilities, and landscaped areas. The project area does not contain any riparian habitat, other sensitive natural communities, or federally or state protected waters or wetlands. No adopted habitat conservation plans, natural community conservation plans, or other approved local, state, or regional habitat conservation plans apply to the project area. Therefore, topics 14(c), and 14(f) are not applicable to the project.



**Impact BI-1: The proposed project would not 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. (*Less than Significant*)**

The project area is within an urban developed area and is primarily within existing paved public right-of-way and existing SFPUC facilities. While a section of the pipeline alignment would extend through Golden Gate Park, it would be located largely within the paved public right-of-way with only a small portion of pipeline crossing an area landscaped with mixed pine and cypress trees between Lincoln Way and Martin Luther King Jr. Drive. The project alignment within Golden Gate Park is not located in or near wildlife species habitat or native plant species habitat, according to the *Golden Gate Park Master Plan*.<sup>123</sup> There may be areas where suitable habitat for sensitive species exists in the areas surrounding the project area, primarily at Lake Merced, where construction at the Lake Merced Pump Station would take place within about 70 feet of the shoreline of the lake, but mostly within buildings and paved areas on the site. However, project construction and operation would not affect these habitats directly. As described below in Section E.17, Hydrology and Water Quality, an erosion and sediment control plan would be prepared to ensure that runoff from construction areas would be managed to avoid runoff into Lake Merced, thus substantially reducing the potential for indirect water quality impacts to the lake.

A total of 30 sensitive plant species, including 11 federal and/or state endangered species (beach layia (*Layia carnos*), Franciscan manzanita (*Arctostaphylos franciscana*), Marin dwarf-flax (*Hesperolinon congestum*), marsh sandwort (*Arenaria paludicola*), San Francisco lessingia (*Lessingia germanorum*), San Francisco popcorn flower (*Plagiobothrys diffusus*), Presidio clarkia (*Clarkia franciscana*), Presidio manzanita (*Arctostaphylos hookeri* ssp. *ravenii*), robust spineflower (*Chorizanthe robusta* var. *robusta*), showy Indian clover (*Trifolium amoenum*), and white-rayed pentachaeta (*Pentachaeta bellidiflora*), are listed on the California Natural Diversity Database and/or U.S. Fish and Wildlife searches within the project vicinity (within 0.25 miles). The project would be in urban developed areas, including landscaped areas; therefore, no suitable habitat for sensitive plant species occurs within the project area and no sensitive plant species would be impacted by the project.

A total of 27 sensitive wildlife species, including 13 federal and/or state-listed (endangered, threatened, candidate, or fully protected) animal/insect species were documented in California Natural Diversity Database and/or U.S. Fish and Wildlife searches as follows. The federal and/or state-listed species include the following: bank swallow (*Riparia riparia*), California black rail (*Laterallus jamaicensis coturniculus*), California red-legged frog (*Rana draytonii*), green sea turtle (*Chelonia mydas*), marbled murrelet (*Brachyramphus marmoratus*), monarch (*Danaus plexippus*), northwestern pond turtle (*Actinemys marmorata*), salt marsh harvest mouse (*Reithrodontomys raviventris*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), tidewater goby (*Eucyclogobius newberryi*), western bumble bee (*Bombus occidentalis*), western snowy plover (*Charadrius nivosus nivosus*), and yellow-billed cuckoo (*Coccyzus americanus*). Although several of these species, including bank swallow, northwestern pond turtle, and California red-legged frog may occur in the region, the project area does not contain suitable habitat for these species. In addition, while western bumble bee once occupied the Bay Area, it is now only found in the Klamath and Interior North Coast Range Mountains and the Cascade Range and Northern Sierra Nevada Mountains within California.<sup>124</sup> There is no

123 San Francisco Parks and Recreation Department Golden Gate Park Master Plan.1998. <https://archive.org/details/goldengateparkma1519sanf>. Accessed December 10, 2024.

124 Simono, Scott, SFPUC biologist, 2025. Data Compilation to Assess the Potential for Three Bumble Bee Species to occur in San Francisco and the Peninsula: 1) *Bombus caliginosus*, 2) *B. crotchii*, and 3) *B. occidentalis*. August 13, 2025.

suitable habitat present in the project area for the remaining species. Therefore, none of the sensitive species have the potential to occur in the project area.

The SFPUC requires implementation of its Standard Construction Measure 7 (Biological Resources), which mandates that a qualified biologist conduct a preconstruction survey in unpaved areas to detect any sensitive species, if present. If sensitive species are present, measures would be implemented to protect biological resources, such as installing wildlife exclusion fencing, establishing work buffer zones, monitoring by a qualified biologist, and other such measures.

The project would occur in developed areas that do not support habitat for sensitive species, and project construction and operation would not have adverse effects on habitats in adjacent areas. The SFPUC would implement its Standard Construction Measure 7 which would ensure impacts to special status species would be avoided and would also implement measures to avoid water quality impacts on Lake Merced during construction. As a result, impacts on special status species would be less than significant. No mitigation would be required.

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**Impact BI-2: The proposed project would not 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 Wildlife or U.S. Fish and Wildlife Service? (*No Impact*)**

The project would be entirely constructed in roadways, existing SFPUC pump station facilities and within developed upland areas of Golden Gate Park. There is no riparian habitat in the project area, and no other sensitive natural community within the area that would be directly affected by construction. However, work in the vicinity of the Lake Merced Pump Station and the pipeline leading to the pump station would be constructed within proximity of Lake Merced. Lake Merced is considered a coastal water under jurisdiction of the Coastal Commission and the shores of the lake support freshwater emergent wetlands and arroyo willow wetlands. Although all construction would occur either inside the existing Lake Merced Pump Station or within paved areas at the developed pump station site, construction of new pipelines would require work within about 70 feet of the vegetated shoreline areas of Lake Merced. There is thus a potential for polluted runoff from construction to affect the lake. However, as noted above, an erosion and sediment control plan would be prepared to ensure that runoff from construction areas would be managed to avoid runoff into Lake Merced, thus substantially reducing the potential for indirect water quality impacts to the lake. No impact on riparian habitat or sensitive natural communities is thus expected.

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**Impact BI-3: The proposed project would not 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. (*Less than Significant*)**

The trees in the project area could support habitat for nesting birds that are protected under the California Fish and Game Code and/or the Migratory Bird Treaty Act. Sections of the project along Lake Merced Boulevard, Sloat Boulevard, Transverse Drive, Clement Street, and John F. Kennedy Drive contain natural areas that provide a higher likelihood for nesting birds. The rest of the project area has a lower potential for nesting birds because of the lack of surrounding suitable habitat. For portions of the pipeline alignment that would cross through unpaved areas and portions of the project that include construction of aboveground structures, the project would likely remove some trees. There are no migratory corridors for non-avian wildlife within the urban areas of San Francisco where the project would be constructed.

The project would require tree removal between the Lake Merced Pump Station and Lake Merced Boulevard (up to five trees), at the location of the Sunset Reservoir Pump Station (up five trees), and potentially at some location in Golden Gate Park, though SFPUC has not determined the number at that location. It would not be possible to replace the removed trees in their original locations, as trees are not permitted to be planted above the pipeline alignment pursuant to the requirements of the SFPUC's Right-of-Way Integrated Vegetation Management Policy.<sup>125</sup> No landmark trees in the project area would be removed. Any street trees that would be removed would be replaced in accordance with the City's Urban Forestry Ordinance, and SFPUC would determine specific locations of replacement trees during the design stage.

This analysis presumes that birds nesting at the project site are likely accustomed to noise and visual disruptions that are common in an urban environment, based on their regular exposure to current noise levels, human presence, and equipment activity. As a result, construction-related noise or visual disturbances would not significantly impact nesting birds or alter their behavior.

If nesting migratory or special status birds are found in the project area during construction and the work causes the loss of an active nest, under the federal Migratory Bird Treaty Act and/or the California Fish and Game Code this could be considered *unauthorized take* and a potentially significant impact. However, the SFPUC requires implementation of its Standard Construction Measure 7 (Biological Resources), which mandates that a qualified biologist conduct a nesting bird survey onsite to detect any active nests (those with eggs, chicks, or raptors displaying mating behaviors). If active nests are present, SFPUC would take steps to protect them from destruction or adverse effects by establishing buffer zones, limiting specific activities, monitoring the area, or delaying construction until the young birds have left the nest. With the required implementation of SFPUC's Standard Construction Measure 7 (Biological Resources), project impacts on nesting birds would be less than significant, and no further mitigation would be necessary.

Construction activities would be temporary and would not interfere 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. Impacts on other migratory species would be less than significant and no mitigation would be required.

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**Impact BI-4: The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (*Less than Significant*)**

Within San Francisco, unpermitted damage to or removal of a landmark tree, street tree, or significant tree would conflict with article 16 of the San Francisco Public Works Code (Urban Forestry Ordinance), and therefore would be a significant impact. It is not anticipated that the project would require the removal of landmark trees or significant trees, and any tree removal would comply with the substantive requirements of the City's Urban Forestry Ordinance. As a result, the project would not conflict with any local policies or ordinances protecting biological resources. The impact would be less than significant.

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125 SFPUC, Amendment to the Right of Way Integrated Vegetation Management Policy. January 13, 2015.

**Impact C-BI-1: The proposed project, in combination with cumulative projects, would not result in significant cumulative impacts on biological resources. (*Less than Significant*)**

For biological resources, the geographic scope for cumulative impacts includes the project area and vicinity within 0.25 miles. As discussed above, the project would have no impact on wetlands or habitat conservation plans, and therefore would not contribute to any potential cumulative impacts on these resources. The majority of cumulative projects would not result in significant impacts on sensitive species or habitats because the area where most cumulative projects would be constructed provides no habitat for special-status species, due to its urban setting. Only the Vista Grande Drainage Basin Project has the potential to affect western pond turtle in Lake Merced, because the project would require construction within the lake itself. The project would not contribute to impacts on western pond turtle or its habitat in Lake Merced because no construction would occur within the lake, and measures to protect water quality would ensure that there are no indirect impacts on species within the lake.

Nesting birds that may occur in the cumulative project area would be acclimated to urbanized environments. Cumulative projects would also be subject to the California Fish and Game Code and Migratory Bird Treaty Act regulations, the City's bird safe building standards, the Urban Forestry Ordinance and the San Francisco Public Works Code. Cumulative projects such as the Caltrans Repaving Project, St. Ignatius Academic Buildings, Stonestown Development Project and SFPUC projects at Merced Manor Reservoir and Sunset Reservoir do not require tree removal that would affect nesting birds. The Lake Merced West Project, Ocean Beach Climate Change Adaptation Project, and Vista Grande Drainage Improvements Project would all entail removal of trees, but tree removal was determined to be less than significant with compliance with requirements cited above and because of the abundance of trees around Lake Merced. There is an abundance of nesting bird habitat in the area where the project and cumulative projects would be constructed and thus the removal of trees by the cumulative projects would not adversely affect the availability of habitat for nesting birds. Therefore, the cumulative projects would not result in a significant cumulative adverse impact on migratory birds. In addition, the cumulative projects would not conflict with any local policies or ordinances protecting biological resources such as tree protection ordinances, and therefore would not result in a significant cumulative impact on biological resources. No mitigation would be required.

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## E.16 Geology and Soils

| Topics:                                                                                                                                                                                                                                                                                | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| <b>GEOLOGY AND SOILS.</b> Would the project                                                                                                                                                                                                                                            |                                |                                                    |                                     |                          |                                     |
| a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:                                                                                                                                                         |                                |                                                    |                                     |                          |                                     |
| 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. | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| ii) Strong seismic ground shaking?                                                                                                                                                                                                                                                     | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| iii) Seismic-related ground failure, including liquefaction?                                                                                                                                                                                                                           | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| iv) Landslides?                                                                                                                                                                                                                                                                        | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| b) Result in substantial soil erosion or the loss of topsoil?                                                                                                                                                                                                                          | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| c) Be located on 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?                                                      | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?                                                                                                                    | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?                                                                                                    | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?                                                                                                                                                                                | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>            |

The project area is not located within an Earthquake Fault Zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no active or potentially active faults exist on or in the immediate project vicinity. The project does not propose septic tanks or alternative wastewater disposal systems. Therefore, Topics E.16(a)(i) and E.16(e) are not applicable to the project.

This section describes the geology, soils, and seismicity characteristics of the project area as they relate to the project and relies on the information, findings, and recommendations provided in geotechnical investigations that were conducted for the initial and subsequent phases of the project.<sup>126 127</sup>

Geotechnical investigations were prepared for the initial phases of the project to review available geologic and geotechnical data for the project alignment from the Lake Merced Pump Station to Lawton Street.<sup>128</sup> The investigations analyzed the project in the context of geologic and geotechnical site conditions; and project-specific structural and geotechnical design and construction recommendations, including for the foundation(s) and protection of surrounding development, such as shoring and underpinning. Preliminary geotechnical and trenchless design and construction recommendations were also assessed for subsequent phases of the project beginning at Lawton Street, extending along 42nd Avenue and ending at Lake Street<sup>129</sup>. The major geological units along this portion of the proposed pipeline are historical artificial fill, Pleistocene-age Colma Formation, and Jurassic and Cretaceous Franciscan Complex.

Subsurface investigations were conducted at key locations along the proposed alignment, including near 32nd Avenue and Taraval Street, where trenchless installation is proposed. These investigations confirmed that the project area north of Vicente Street is generally underlain by unconsolidated dune sand deposits, while the area south of Vicente Street is underlain by the Colma Formation, characterized by loose, fine- to medium-grained sands.<sup>130</sup> Two seismic sounding surveys were also conducted to support evaluation of seismic hazards.

**Impact GE-1: The proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving fault rupture, strong seismic ground shaking, seismically induced ground failure, including liquefaction, or landslides. (*Less than Significant*)**

### ***Seismic Ground Shaking***

The project area is in a seismically active region near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. The relative movement between the Pacific Plate and the North American Plate generally occurs across a 50-mile-wide zone extending from the San Gregorio Fault in the southwest to the Great Valley Thrust Belt in the northeast. Strain produced by the relative motions of these plates is relieved by faulting on the San Andreas Fault Zone and related faults (San Gregorio, Calaveras, and Hayward), and displacement on the Great Valley and other thrust faults in the central California area.

A study by the United States Geological Survey 2014 Working Group on California Earthquake Probabilities<sup>131</sup> concludes that there is a 72 percent probability of a strong earthquake (maximum moment magnitude  $\geq 6.7$ ) occurring in the San Francisco Bay region over the next 30 years (starting in 2014). The probability of a strong

126 Walker, M. J., Lorincz, L., McCurdy, K., & Montoya, E., Project support for conceptual engineering report for potable emergency firefighting water system pipeline, Phase 1 – Geotechnical and trenchless engineering services (Final Geotechnical Technical Memorandum), San Francisco Public Utilities Commission, April 22, 2022.

127 Motamed, M., & Montoya, E. Support for Conceptual Engineering Report for ERDIP Segment of Potable Emergency Firefighting Water System Pipeline – Geotechnical and Trenchless Engineering Services, December 2022.

128 Walker et al., 2022.

129 Motamed & Montoya, 2022

130 SFPUC. San Francisco Groundwater Supply Project Draft EIR, March 13, 2013.

131 2014 Working Group on California Earthquake Probabilities (WGCEP), “Long-Term Time-Dependent Model for the Third Uniform California Earthquake Rupture Forecast, Version 3 (UCERF 3),” Bulletin of the Seismological Society of America, March 10, 2015.



earthquake (maximum moment magnitude  $\geq 6.7$ ) occurring during that time period is 33 percent for the North San Andreas Fault Zone, 32 percent for the Hayward-Rodgers Creek Fault Zone, and 25 percent for the Calaveras Fault Zone.

The pipeline alignment is located within the San Andreas fault system, which distributes shearing forces across a complex zone of active faults that include the San Andreas, Hayward, and Calaveras faults. The San Andreas Fault and San Gregorio Fault are approximately 2.2 and 6 miles to the southwest of the site, respectively, while the Hayward Fault and Calaveras Fault are located approximately 17 and 28 miles, respectively, to the northeast. The project area is not located within a state-designated Alquist-Priolo Earthquake Fault Zone, and no mapped faults are known to traverse the area. The intensity of earthquake ground motion at the project sites would depend upon the characteristics of the generating fault, distance to the earthquake fault, magnitude and duration of the earthquake, and specific subsurface conditions. Ground shaking is the primary cause of earthquake damage to man-made structures. Strong ground shaking could cause shearing, differential settlement, or heave of structures that could damage buildings and structures. The project sites are located in an area of high seismicity, where amplified strong to very strong ground shaking could occur resulting from a large earthquake on the San Andreas Fault Zone or any of the active regional faults.

The SFPUC seismic design engineering standard and requirements<sup>132</sup> set forth consistent criteria for seismic design and retrofit of all facilities and components. The seismic design standard incorporates by reference, where appropriate, the applicable building codes and industry standard procedures normally used for the design and rehabilitation of such facilities. These codes and standards specify minimum seismic design requirements. Due to the high seismic hazards in the San Francisco area, the SFPUC seismic design standard provides design requirements that may exceed applicable building codes or industry standards for specific facilities and components.

The project is being evaluated and designed to meet level of service performance goals to avoid unacceptable system failure and engineered in accordance with SFPUC seismic design standards. Therefore, the project would not expose persons or structures to substantial adverse effects related to ground shaking and would not exacerbate existing conditions related to ground shaking. The impact would be less than significant. No mitigation would be required.

### ***Seismic-Related Ground Failure and Liquefaction***

Liquefaction is a phenomenon where saturated sand and silt take on the characteristics of a liquid during the intense shaking of an earthquake. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction. The seismic design standard requires geotechnical and seismologic studies of a site and further specifies seismic analysis and design methodology to be used in the project analyses to design a seismically resilient system.

The project sites extend through soils with different levels of liquefaction susceptibility. Certain areas are mapped by the U.S. Geological Survey as having “very high” liquefaction susceptibility, specifically along Lake Merced Boulevard, where the pipeline alignment would cross one zone mapped as very high

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132 SFPUC, *General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities*, June 2014.

liquefaction susceptibility.<sup>133</sup> The portion of the PEFWS alignment from Lawton Street to Lake Street is mapped as “moderate” liquefaction susceptibility by California Geological Survey.<sup>134</sup> An SPT-based liquefaction evaluation was completed for this area, and depths to 25 feet appear to have potentially liquefiable soils.<sup>135</sup> Potential design measure to address liquefaction include use of welded steel pipeline,<sup>136,137</sup> use of ground improvement techniques, reinforcing the pipeline to accommodate anticipated ground movement, and supporting the pipeline with micropiles or drilled piles.

All other alignment areas north of Lake Merced Boulevard are not within the State of California Seismic Hazard Zone for liquefaction hazard.<sup>138</sup> The pipeline alignment along the western portion beginning at Ulloa Street and extending north to Lawton Street is not located within any zones designated for liquefaction, earthquake induced landslides, or earthquake.<sup>139</sup> Geotechnical borings were undertaken by the SFPUC to characterize the subsurface conditions at the site, permeability of soils, and the depth of the groundwater table. The investigation results indicate that the sand below the groundwater table is dense to very dense, suggesting that it is not susceptible to liquefaction during a major earthquake.

Because the project would be designed to meet SFPUC seismic design standards and due to the nature of the project (i.e., primarily consisting of underground infrastructure and uninhabited pump stations), the project would not expose persons or structures to substantial adverse effects or exacerbate existing conditions related to ground failure, including liquefaction. Therefore, the impact would be less than significant. No mitigation would be required.

## **Landslides**

The pipeline alignment at the Lake Merced Pump Station is in a Landslide Zone designated by the California Geological Survey. The northeast slope of the pump station site, located in the pipeline vicinity, is mapped as a landslide, but has remained stable even after the 1989 Loma Prieta earthquake.<sup>140</sup> The pipeline alignment within this area has relatively minimal grade change, with slopes ranging between 25 degrees to 28 degrees near the pipeline at the Lake Merced Pump Station. Furthermore, the majority of the project area north of the Lake Merced Pump Station is not within a mapped landslide hazard zone, except for a small portion on the northwest side of the Sunset Reservoir.<sup>141</sup> The western portion of the pipeline alignment starting along Ulloa Street and extending north to Lawton Street is not located within a mapped landslide or slope hazard zone. The Outer Sunset and Outer Richmond neighborhoods are built on historic sand dunes and sedimentary deposits.<sup>142, 143</sup> Areas of sandy composition are not typically affected by landslides. Most of the historical landslide and lateral spreading events have occurred in the west-facing lake bluffs of Lake

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133 Motamed, M., & Montoya, E, 2022.

134 Motamed, M., & Montoya, E, 2022.

135 Motamed, M., & Montoya, E, 2022.

136 Walker et al., 2022.

137 Motamed, M., & Montoya, E, 2022.

138 San Francisco Public Works – Structural Engineering Section, Geotechnical Investigation Report: Potable Emergency Firefighting Water System (PEFWS) Pipeline Project – Phase 1 Contract B, December 12, 2024.

139 San Francisco Public Works, 2024.

140 Walker et al., 2022.

141, City and County of San Francisco, San Francisco Seismic Hazard Zones. SFGov Coordinator’s Portal, <https://data.sfgov.org>, accessed November 20, 2024.

142 Hoodline, *For Outer Sunset, sea level rise will be less about water, more about sand*, January 17, 2016, <https://www.c40.org/news/global-cities-and-regions-advance-towards-zero-waste/>, accessed November 20, 2024.

143 FoundSF, *The Sunset District: From dunes to cityscape*, 2004, [https://www.foundsf.org/index.php?title=The Sunset District: From Dunes to Cityscape](https://www.foundsf.org/index.php?title=The_Sunset_District:_From_Dunes_to_Cityscape), accessed November 20, 2024.

Merced and not within the footprint of the project alignment.<sup>144</sup> The project would comply with the geotechnical recommendations outlined in the geotechnical report, including considerations for the potential for soil displacement during a design-level event. In areas subject to landslides, design options include using flexible utility connections to accommodate displacement, supporting the pipeline on piles that also stabilize the slope, or improving the slope stability through earthwork or ground treatments like cement mixing or permeation grouting. As such, the project would not expose persons or structures to substantial adverse effects or exacerbate existing conditions related to landslides. The impact relative to landslides would be less than significant. No mitigation would be required.

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**Impact GE-2: The proposed project would not result in substantial erosion or loss of topsoil. (*Less than Significant*)**

Construction-related ground disturbance consisting of clearing, trenching, and excavation could increase the potential for soil erosion in the area of ground disturbance. Overall, approximately 261,000 cubic yards of demolition debris, including concrete/asphalt pavement, and soils for localized soil improvements and grading across the project area would be removed, which could create the potential for windborne and waterborne soil erosion.

As discussed in Section E.17, Hydrology and Water Quality, the SFPUC or its contractor(s) would be required to develop and implement an erosion and sediment control plan to address construction-related runoff under the article 4.2 construction site runoff control permit requirement. The plan would include a suite of best management practices tailored to the project to prevent erosion. These best management practices may include measures, such as using straw wattles, sandbags, track-out control, and silt fencing and covering stockpiles, to control erosion and sedimentation during construction and prevent discharge of soils into stormwater runoff. The SFPUC would conduct routine inspections of all best management practices to document compliance and identify deficiencies to be corrected. Compliance with these requirements would ensure that the project would not result in substantial erosion or loss of topsoil. As a result, the impact relative to a loss of topsoil would be less than significant. No mitigation would be required.

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**Impact GE-3: The proposed project would not result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse by being located on a geologic unit or soil that is unstable, or that could become unstable. (*Less than Significant*)**

Lateral spreading is a seismically induced ground deformation failure in which near surface soil layers typically break into blocks that progressively move downslope or toward a nearby free face such as a stream channel, river embankment, or a shoreline. The native soils below the water table have a low susceptibility to liquefaction. There are no significant grade changes or open faces near the initial phase in the southern alignment project area that could induce lateral spreading. The potential for liquefaction-induced lateral spreading is low due to the low susceptibility of native soils below the water table and the minimal grade

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144 Bonilla, M.G., Landslides in the San Francisco South Quadrangle, California: U.S. Geological Survey Open File Report, 1960.

changes near the project site.<sup>145, 146</sup> Additionally, groundwater was not encountered during geotechnical drilling for the southern portion of the alignment beginning at Lake Merced Pump Station.<sup>147</sup>

As discussed in Impact GE-1, the project area consists of both level and sloped areas. Although excavations may be subject to sliding in sloped areas, installation of shoring, as proposed, would provide slope protection during construction and maintenance. Further, foundations for the new pump stations, excavated to approximately 10 feet below grade, would be installed in accordance with the SFPUC's seismic design requirements. As such, the project would not expose persons or structures to substantial adverse effects or exacerbate existing conditions related to geologic unit or soil instability, and impacts associated with landslides would be less than significant. No mitigation would be required.

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**Impact GE-4: The proposed project would not create substantial risks to life or property by being located on expansive soils. (*Less than Significant*)**

*Expansive soils* are characterized by their ability to undergo significant volume change (shrink and swell) because of variation in soil moisture content. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine-grained, with a high to very high percentage of clay. Soils with moderate to high shrink-swell potential would be classified as expansive soils.

The subsurface conditions along the pipeline alignment, from Sloat Boulevard to Lawton Street and extending south from Sloat Boulevard to the Lake Merced Pump Station, consist mainly of pavement, fill, and layers of sand with varying density and minor amounts of silt and clay.<sup>148, 149</sup> Geotechnical investigation for the western portion of the alignment covering the Sunset and Richmond Districts determined the soils are predominantly cohesionless and are therefore not considered susceptible to expansion.<sup>150</sup> Subsurface conditions along the pipeline alignment from Lawton Street to Lake Street, northeast of Golden Gate Park, are also dominated by pavement, fill and sand with minimal clay present.<sup>151</sup> Because there is little clay present in subsurface soils the potential for impacts associated with expansive soils is minimal. A summary of possible soil behaviors during construction of trenchless-crossing shaft excavations and boring operations for initial phases of the project was completed for each soil type to assess wet and dry conditions. SFPUC anticipates that soils would either be naturally dry or kept at a stable moisture condition due to dewatering, meaning they are not expected to cycle between wet and dry states during construction. As a result, expansive soils are unlikely to experience significant volume changes or moisture fluctuations. The consistent saturation minimizes volume changes, thus reducing the risk of soil-related issues that could affect stability during construction.

Because the project consists primarily of underground pipelines, appurtenances and uninhabited pump stations, the potential for impacts associated with expansive soils is minimal. Nonetheless, the San Francisco Building Code would require an analysis of the project sites' potential for soil expansion impacts and, if

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145 Walker et al., 2022.

146 San Francisco Public Works, 2024.

147 AGS, Inc. Potable Emergency Firefighting Water System Pipeline – Phase I (Contract A), 2024.

148 Walker et al., 2022.

149 Motamed, M., & Montoya, E, 2022.

150 San Francisco Public Works, 2024.

151 Walker et al., 2022.

applicable, implementation of measures to address them as part of the design-level geotechnical investigation prepared for the project. Therefore, potential impacts related to expansive soils would be less than significant. No mitigation would be required.

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**Impact GE-5: The proposed project would not directly or indirectly destroy a unique geologic feature. (No Impact)**

A *unique geologic feature* embodies distinctive characteristics of any regional or local geologic principles, provides a key piece of information important to geologic history, contains minerals not known to occur elsewhere in the county, and/or is used as a teaching tool. The project area is located primarily within existing public right-of-way and SFPUC facilities. There are no unique geologic features in the project area. There would be no impacts on unique geologic features. No mitigation would be required.

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**Impact GE-6: The proposed project could directly or indirectly destroy a unique paleontological resource. (Less than Significant with Mitigation)**

*Paleontological resources* are the fossilized evidence of past life found in the geologic record. Fossils are preserved in sedimentary rocks and may include bones, teeth, shells, leaves, and wood. Despite the abundance of these rocks, and the vast number of organisms that have lived through time, preservation of plant or animal remains as fossils can be a rare occurrence. Paleontological resources are considered nonrenewable resources because the organisms they represent no longer exist, thus, once destroyed, these resources can never be replaced.

Not all paleontological discoveries are considered to be of scientific importance and there are several criteria to determine the scientific importance of fossils. These criteria include (1) if fossils provide data on evolutionary relationships and developmental trends among organisms, both living and extinct; (2) the age of rock units, sedimentary stratum, or depositional history of the region; development of biological communities; or (3) unusual or spectacular circumstances in the history of life.<sup>152, 153</sup> These data are important because they are used to examine evolutionary relationships, provide insight on the development of and interaction between biological communities, establish time scales for geologic studies, and for many other scientific purposes.

The probability of finding paleontological resources can be broadly predicted from the geologic units present at or near the ground surface. Therefore, geologic mapping classifications of soil units can be used for assessing the potential for the occurrence of paleontological resources. The City, in collaboration with qualified paleontologists, developed the San Francisco Paleontological Sensitivity Map to classify the potential for areas in the city to yield paleontological findings using the modified Potential Fossil Yield Classification system as the basis for its paleontological potential designations.<sup>154</sup> The classification system is a predictive resource management tool founded on two basic facts of paleontology: that occurrences of

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152 Murphey, P.C., Knauss, G.E., Fisk, L.H., Deméré, T.A., and Reynolds, R.E., Best practices in mitigation paleontology: Proceedings of the San Diego Society of Natural History, No. 47, 2019.

153 Society of Vertebrate Paleontology, Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources., Society of Vertebrate Paleontology, Impact Mitigation Guidelines Revision Committee, 2010.

154 United States Department of the Interior, Bureau of Land Management. Potential Fossil Yield Classification System for Paleontological Resources on Public Lands. IM 2016-124. Instruction Memorandum, 2016, [https://www.blm.gov/sites/blm.gov/files/uploads/IM2016-124\\_att1.pdf](https://www.blm.gov/sites/blm.gov/files/uploads/IM2016-124_att1.pdf), accessed December 9, 2024.

paleontological resources are closely tied to the geologic units that contain them, and that the likelihood of the presence of fossils can be broadly predicted from the distribution of geologic units at or near the surface. The paleontological potential designations classify soil potential from very low potential to very high potential. Within the city, paleontological potential ranges from very low to moderate potential and unknown potential. The type of geologic units that contain a high or very high potential for paleontological resource occurrence were not identified in the city based on currently available data.

For assessment of paleontological resource impacts, each surficial geologic unit in the city is assigned a paleontological potential level, based on the potential fossil yield classification system for paleontological resources developed by the U.S. Bureau of Land Management in consultation with qualified experts, regarding the geologic units in San Francisco.<sup>155</sup> Under this system, the classification of geologic units is based on the relative abundance of scientifically significant paleontological resources and their potential to yield paleontological resources. This system provides guidance for predicting, assessing, and mitigating impacts on paleontological resources. Surficial geologic unit mapping does not account for the paleontological potential of underlying geologic units. It is possible for a geologic unit with moderate paleontological potential, for example, to underlie a surficial geologic unit with low or very low potential. The levels of potential (i.e., very low, low, moderate, high, very high, and unknown) are defined as outlined below.

**Very Low Potential:** Geologic units (Precambrian Age) are not likely to contain recognizable paleontological resources. Units are igneous or metamorphic, excluding air-fall and reworked volcanic ash. Potential for significant paleontological resource impact is usually negligible, and impact reduction requirement is unnecessary except in rare or isolated circumstances. This unit is designated with the identifier “1” under the City’s paleontological resource impact evaluation guidelines.

**Low Potential:** Geologic units (i.e., younger than 10,000 years before present [recent aeolian deposits]) are not likely to contain paleontological resources. Fossil preservation is unlikely. The potential for a significant paleontological resource impact is generally low; an impact reduction requirement is usually unnecessary, except in rare or isolated circumstances. This unit is designated with the identifier “2” under the City’s paleontological resource impact evaluation guidelines.

**Moderate Potential:** Sedimentary geologic units (marine in origin) where fossil content varies in significance, abundance, and the predictability of occurrence. The potential for a significant paleontological resource impact is moderate. Impact reduction options could include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. A preconstruction study may be required. This unit is designated with the identifier “3” under the City’s paleontological resource impact evaluation guidelines.

**High Potential:** No occurrence in San Francisco.

**Very High Potential:** No occurrence in San Francisco.

**Unknown Potential:** Geologic units that cannot receive an informed class assignment or have not been studied in detail; reports of finds are anecdotal and unverified. Geological units may exhibit

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155 U.S. Department of the Interior, Bureau of Land Management, *Potential Fossil Yield Classification System*, 2016, [https://www.blm.gov/sites/blm.gov/files/uploads/IM2016-124\\_att1.pdf](https://www.blm.gov/sites/blm.gov/files/uploads/IM2016-124_att1.pdf), accessed March 27, 2025.



features or preservation conditions that suggest unique paleontological resources could be present, but little information about the actual paleontological resources of the unit or area is known. There is no information on the age of the unit. In San Francisco, this applies to units that are listed as being Holocene to Pleistocene. Holocene-age sediments are generally considered too young to contain in situ fossils. Pleistocene-age sediments have produced Ice Age fossils in San Francisco. Based on the mapping of surface geology, most areas in San Francisco are classified as having unknown paleontological resource sensitivity. Because of the unknown sensitivity potential, mitigation during ground-disturbing activities may be necessary. This unit is designated with the identifier “U” under the City’s paleontological resource impact evaluation guidelines.

While fill materials are anticipated to be present below roadways several feet in depth, subsurface project construction for the pipeline and appurtenances would include excavations up to 16 feet deep for open trench construction and up to 30 feet deep for trenchless construction. The construction sites for the new pump stations would be excavated approximately 10 feet below grade. As described under Impact GE-4, a portion of the project site is directly underlain by artificial fill, which has no paleontological sensitivity. Along the portion of the pipeline alignment from Sloat Boulevard to Lawton Street, Holocene-age (from 11,700 years ago to the present) dune sands from aeolian deposition are mapped, which are generally considered to have low potential for fossil preservation.<sup>156</sup> Beneath artificial fill, the Colma Formation was encountered at depths ranging from approximately 10 to 30 feet below ground surface in all areas where geotechnical investigations were conducted. The Colma Formation is recognized as having high paleontological sensitivity.<sup>157</sup> Additionally, geologic mapping indicates that bedrock of the Franciscan Formation may be present near the surface in areas along the alignment from Lawton Street to Lake Street. Based on the reasonable potential that paleontological resources may be present at some locations, these proposed excavations could damage or destroy paleontological resources; this impact is therefore considered potentially significant.

Implementation of **Mitigation Measures M-GE-6: Inadvertent Discovery of Paleontological Resources** during Construction would minimize potential paleontological impacts by ensuring that workers are trained to recognize paleontological resources and by establishing procedures should unforeseen discovery of paleontological resources occur. The measure outlines stop work procedures and requires establishment of a buffer around any resource discovered until the potential resource, monitoring, resource evaluation, and preservation methods. With implementation of the mitigation measure, the impact on paleontological resources would be reduced to less than significant with mitigation.

#### **Mitigation Measure M-GE-6: Inadvertent Discovery of Paleontological Resources during Construction**

Worker Awareness Training. Prior to commencing construction, and ongoing throughout ground-disturbing activities (e.g., excavation, utility installation), the SFPUC shall engage a qualified paleontologist meeting the standards specified by the Society of Vertebrate Paleontology (Society of Vertebrate Paleontology 2010) to train all project construction workers regarding how to recognize paleontological resources and on the contents of the paleontological resources alert sheet, as provided by the planning department. The paleontological resources alert sheet shall be prominently displayed at the construction site during ground-disturbing activities for reference

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<sup>156</sup> Walker et al., 2022.

<sup>157</sup> San Francisco Planning Department, 2017. *Section 4.M. Geology and Soils*. Seawall Lot 337 and Pier 48 Mixed-Use Project Draft Environmental Impact Report. Retrieved from [https://sfmea.sfplanning.org/MissionRock\\_Sec\\_4.M\\_Geology.pdf](https://sfmea.sfplanning.org/MissionRock_Sec_4.M_Geology.pdf), accessed March 27, 2025.

regarding potential paleontological resources. In addition, the SFPUC shall inform the contractor and construction personnel of the immediate stop work procedures and other procedures to be followed if bones or other potential fossils are unearthed at the project site. Should new workers that will be involved in ground-disturbing construction activities begin employment after the initial training has occurred, the construction supervisor shall ensure that they receive the worker awareness training as described above.

Paleontological Resource Discoveries. In the event of the discovery of an unanticipated paleontological resource during project construction, ground-disturbing activities shall temporarily be halted within 25 feet of the find until the discovery is examined by a qualified paleontologist as recommended by the Society of Vertebrate Paleontology standards (Society of Vertebrate Paleontology 2010) and best practices in mitigation paleontology (Murphey et al. 2019). The paleontologist shall consult the ERO and SFPUC. Work within the sensitive area shall resume only when deemed appropriate by the qualified paleontologist in consultation with the ERO.

The qualified paleontologist shall determine 1) if the discovery is scientifically significant; 2) the necessity for involving other responsible or resource agencies and stakeholders, if required or determined applicable; and 3) methods for resource recovery. If a paleontological resource assessment results in a determination that the resource is not scientifically important, this conclusion shall be documented in a paleontological evaluation letter to demonstrate compliance with applicable statutory requirements (e.g., Federal Antiquities Act of 1906, CEQA Guidelines section 15064.5, Public Resources Code Chapter 17, section 5097.5, Paleontological Resources Preservation Act 2009). The paleontological evaluation letter shall be submitted to the ERO for review within 30 calendar days of the discovery.

If in consultation with the ERO the qualified paleontologist determines that a paleontological resource is of scientific importance, the qualified paleontologist shall make a recommendation as to what action, if any, is warranted and prepare a paleontological mitigation program. The mitigation program shall include measures to fully document the resource of scientific importance. It shall include: 1) procedures for construction monitoring at the project site; 2) fossil preparation and identification procedures; 3) curation of paleontological resources of scientific importance into an appropriate repository; and 4) preparation of a Paleontological Resources Report (report or paleontology report) at the conclusion of ground-disturbing activities. The qualified paleontologist shall submit the mitigation program to the ERO for review and approval within ten business days of the discovery.

To avoid construction delays, fully exposed fossils will be immediately removed by the paleontologist to the extent feasible. Consistent with the Society of Vertebrate Paleontology 2010 guidelines, samples of the soil matrix where the discovery occurred may need to be removed from the project site and processed elsewhere. Mitigation required by this measure could suspend construction within an appropriate buffer zone around a discovered paleontological resource or area for up to a maximum of four weeks. At the direction of the ERO and in coordination with the SFPUC, the suspension of construction may be extended beyond four weeks for a reasonable time required to implement appropriate mitigation only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological to a less-than-significant level.

Upon approval by the ERO, ground-disturbing activities in the project area shall resume and be monitored as determined by the qualified paleontologist for the duration of such activities.

The paleontology report shall include dates of field work, results of monitoring, fossil identifications to the lowest possible taxonomic level, analysis of the fossil collection, a discussion of the scientific significance of the fossil collection, conclusions, locality forms, an itemized list of specimens, and a repository receipt from the curation facility. The SFPUC shall be responsible for the preparation and implementation of the mitigation program, in addition to any costs necessary to prepare and identify collected fossils, and for any curation fees charged by the paleontological repository. The paleontology report shall be submitted to the ERO for review within 30 business days from conclusion of ground-disturbing activities, or as negotiated following consultation with the ERO.

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**Impact C-GE-1: The proposed project, in combination with cumulative projects, would not result in significant cumulative impacts on geology, soils, or paleontological resources. (*Less than Significant with Mitigation*)**

Environmental impacts related to geology and soils are generally site specific. All development within San Francisco is subject to the seismic safety standards and design review procedures of the California and local building codes and to construction site runoff regulations of section 146 of the Public Works Code. These regulations would ensure that cumulative effects of development on seismic safety, geologic hazards, and erosion are less than significant. For these reasons, the project would not combine with cumulative projects in the project vicinity to create a significant cumulative impact related to geology and soils.

Impacts related to paleontology are also highly site specific and localized because paleontological resources are typically individual fossils. For this reason, the geographic scope for assessing cumulative impacts on paleontological resources is limited to projects that would be immediately adjacent to each other that could potentially impact the same fossil that might straddle a line where excavation would be occurring on either side, conducted by two (or more) separate but adjacent projects. None of the identified cumulative projects identified are adjacent to each other (see [Figure 12](#)). As a result, significant cumulative impacts on paleontological resources would not result from the construction of those projects. Nevertheless, the proposed project would be constructed adjacent to some of the identified cumulative projects (including the Sunset Reservoir projects, the Merced Manor project, and the Park Merced project), which means that significant cumulative impacts on paleontological resources could result (if present at the depths of excavation required for adjacent projects) and the project's contribution could potentially be cumulatively considerable (significant). However, because the proposed project would be required to implement **Mitigation Measure M-GE-6: Inadvertent Discovery of Paleontological Resources during Construction**, its contribution to a significant cumulative impact on paleontological resources would be reduced to less than cumulatively considerable with mitigation (less than significant with mitigation).

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## E.17 Hydrology and Water Quality

| Topics:                                                                                                                                                                                                               | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>HYDROLOGY AND WATER QUALITY.</b> Would the project                                                                                                                                                                 |                                |                                                    |                                     |                          |                          |
| a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?                                                                             | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?                                 | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would: |                                |                                                    |                                     |                          |                          |
| i) Result in substantial erosion or siltation on- or off-site;                                                                                                                                                        | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;                                                                                           | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or                            | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| iv) Impede or redirect flood flows?                                                                                                                                                                                   | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?                                                                                                                   | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?                                                                                               | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Impact HY-1: The proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. (Less than Significant)**

The majority of the project area is served by the City's combined sewer system; however, the Lake Merced Pump Station is part of the City's separate sewer system. As further discussed below, project-related stormwater for the majority of the project area that flows into the City's combined sewer system would be treated according to the standards contained in the City's National Pollutant Discharge Elimination System permit for the Oceanside Water Pollution Control Plant before it is discharged into the Pacific Ocean. The

National Pollutant Discharge Elimination System standards are set and regulated by the San Francisco Bay Regional Water Quality Control Board and are designed to meet state and federal antidegradation policies.

## Construction

**Stormwater Discharge.** If not properly managed, construction activities such as ground disturbance, stockpiling of excavated materials, and transportation of materials, could result in temporary soil erosion. Sediments disturbed by construction activities could flow into the combined sewer system, separate sewer system, or directly into receiving waters in violation of water quality standards when it is raining. Accidental chemical releases from the project work area and staging areas could also occur due to the use of paints, solvents, fuels, lubricants, and other hazardous materials associated with heavy construction equipment. If released, these hazardous materials could be transported to receiving waters through stormwater runoff, wash water, and dust control water, which could reduce the quality of the receiving waters.

The majority of stormwater runoff from the western portions of San Francisco, including flow from most of the project area, is diverted to the City's combined sewer system for treatment and eventual discharge to the Pacific Ocean. Under the federal Clean Water Act, the discharge of pollutants to waters of the United States is prohibited unless performed in compliance with a National Pollutant Discharge Elimination System permit. Any stormwater discharge during construction that flows into the City's combined sewer system would receive treatment to standards set forth in the Oceanside Water Pollution Control Plant National Pollutant Discharge Elimination System permit prior to discharge.

Water quality impacts or construction-related stormwater discharges would be minimized through compliance with applicable regulations. The project would be required to comply with the construction site runoff control permit in accordance with article 4.2 of the San Francisco Public Works Code. According to the permit, an erosion and sediment control plan must be prepared and implemented for any project greater than 5,000 square feet. This plan must include the following information: location and perimeter of the site, location of nearby storm drains and/or catch basins, existing and proposed roadways and drainage patterns within the site, and a drawing or diagram of the sediment and erosion control devices to be used onsite. At a minimum, the plan would also contain a visual monitoring program and a chemical monitoring program for nonvisible pollutants that could result from use and storage of hazardous materials. The plan would also specify minimum best management practices related to housekeeping (storage of construction materials, waste management, vehicle storage and maintenance, landscape materials, pollutant control); non-stormwater management; erosion control; sediment control; and run on and runoff control. Under the construction site runoff control permit requirements of the Public Works Code article 4.2, the construction contractor would be required to conduct daily inspections during the rainy season (October 1 through April 15) if performing clearing, grading, and excavating activities, or otherwise weekly inspections during the dry season for all activities.<sup>158</sup> The contractor would also be required to conduct maintenance of all erosion and sediment controls and must provide inspection and maintenance information to the SFPUC as the administering agency. The project would be required to develop and implement an erosion and sediment control plan and obtain a construction site runoff control permit in accordance with San Francisco Public Works Code article 4.2 section 146.7 and section 146.5.

In 2022, the State Water Resources Control Board (state water board) adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (SWRCB order 2022-0057-DWQ), referred to herein as the Construction General Permit. This permit requires the development and

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158 SFPUC, Construction Site Runoff Control Technical Standards and Guidelines. February 2014. Available at [https://www.sfpuc.gov/sites/default/files/construction-and-contracts/design-guidelines/CSR\\_TechnicalStandardsGuidelines\\_2014.pdf](https://www.sfpuc.gov/sites/default/files/construction-and-contracts/design-guidelines/CSR_TechnicalStandardsGuidelines_2014.pdf)

implementation of a stormwater pollution prevention plan for construction activities that disturb 1 acre or more of soil in the separate sewer area (i.e., outside the combined sewer system perimeter). As the project would disturb less than 1 acre of land at the Lake Merced Pump Station (i.e., the area outside of the City's combined sewer system), this project is not subject to the requirements of the Construction General Permit.

In addition to the regulatory requirements for runoff control, the SFPUC would implement standard construction measures that protect water quality. SFPUC Standard Construction Measure 3 (Water Quality) requires the implementation of erosion and sediment controls (e.g., fiber rolls and/or gravel bags around storm drain inlets, silt fencing) tailored to the project to prevent discharges of sediment and other pollutants into storm drains and all surface waters. These measures would be tailored to the project site and included in the project's erosion and sediment control plan. SFPUC Standard Construction Measure 6 (Hazardous Materials) requires the preparation and implementation of a plan for treating, containing, and removing contaminated or hazardous materials in accordance with applicable local, state, and federal regulations. Compliance with article 4.2 construction site runoff control permit requirements, the SFPUC Standard Construction Measures 3 (Water Quality), and 6 (Hazardous Materials), would ensure water quality impacts related to violations of water quality standards or degradation of water quality due to discharge of construction-related stormwater runoff would be less than significant. No mitigation would be required.

**Dewatering.** If construction dewatering is necessary, the project would be required to obtain a Batch Wastewater Discharge Permit from the SFPUC prior to any dewatering activities. Groundwater encountered during construction activities would be subject to the requirements of article 4.1 of the San Francisco Public Works Code, which requires that groundwater meet specified water quality standards before it may be discharged into the sewer system. Dewatering of pipelines would also be required during shutdown, testing and startup. Project dewatering would be completed in compliance with applicable state and local water quality protection requirements; therefore, water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of dewatering waste would be less than significant. No mitigation would be required.

## Operation

Following project construction, operations of the pipeline system would continue similar to existing operations and would not result in new water quality impacts. Regulatory requirements for maintenance activities that involve soil disturbance would be similar to those described above for construction and would also be less than significant.

During project operation, stormwater from the two new pump station sites would continue to flow into the combined sewer system and be treated to the standards specified in the City's National Pollutant Discharge Elimination System permit for the Oceanside Plant before discharge into the Pacific Ocean. Furthermore, the project would comply with the substantive requirements of article 4.2 of the San Francisco Public Works Code, section 147, (stormwater management ordinance). SFPUC has developed the San Francisco 2016 Stormwater Management Requirements and Design Guidelines (stormwater management guidelines),<sup>159</sup> in accordance with the requirements of this ordinance. The intent of the City's stormwater management program is to (1) reduce the volume of stormwater entering the City's combined and separate sewer systems, and (2) protect and enhance the water quality of receiving waters, pursuant to and consistent with federal and state laws, lawful standards, and orders applicable to stormwater and urban runoff control and the City's authority to manage and operate its drainage systems. Under the stormwater management guidelines,

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159 San Francisco Public Utilities Commission, San Francisco Stormwater Management Requirements and Design Guidelines, Urban Watershed Management Program, May 2016, <https://www.sfport.com/node/5558>, accessed December 9, 2024.



projects that create and/or replace over 5,000 square feet of impervious surface are required to manage stormwater discharge into the combined sewer system and prepare a *stormwater control plan*. Stormwater control plans are required to demonstrate how a project would meet all applicable stormwater performance requirements and describe the best management practices (e.g., vegetative roofs and rainwater harvesting) that would be implemented to minimize stormwater runoff. Specifically, the plan would include the following elements: site characterization, design and development goals, site plan, site design, source controls, treatment best management practices, comparison of design to established goals, and an operations and maintenance plan. Treatment best management practices that could be used to reduce pollutant loads in stormwater include infiltration basins or biofiltration areas. Compliance with all applicable federal, state, and local laws; lawful standards; and orders would ensure that project operation would not violate water quality standards or waste discharge requirements. Therefore, the project would not substantially degrade surface or groundwater quality. As a result, the impact on water quality would be less than significant. No mitigation would be required.

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**Impact HY-2: The proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the proposed project may impede sustainable groundwater management of the basin. (*Less than Significant*)**

### Construction

As discussed above under Impact HY-1, it is possible that project construction would require dewatering in areas of shallow groundwater. Any effects related to lowering the water table due to dewatering would be temporary and localized and would not substantially deplete groundwater resources. As a result, construction impacts on groundwater resources would be less than significant. No mitigation would be required.

### Operation

The project does not include any groundwater wells for extraction of groundwater, nor would it substantially increase impervious surfaces. As discussed under Impact HY-1, the project would also comply with the substantive requirements of article 4.2 of the San Francisco Public Works Code, which requires the preparation of a stormwater control plan for projects that create and/or replace over 5,000 square feet of impervious surface. Dewatering of vaults would occur periodically but would entail very small amounts of groundwater. Project operation would therefore not interfere substantially with groundwater recharge. As a result, the impact on groundwater recharge would be less than significant. No mitigation would be required.

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**Impact HY-3: The proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would: result in substantial erosion or siltation on- or off-site, substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flood flows. (*Less than Significant*)**

The project area does not contain any streams or water bodies. Therefore, the project would have no impact with respect to altering the course of a stream or river in a manner that would result in substantial erosion or siltation on- or off-site; substantially increase the rate or amount of surface runoff in a manner which would

result in flooding on- or off-site; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flood flows. The project area is adjacent to Lake Merced but would not alter the lake and would not increase impervious surfaces at the Lake Merced Pump Station so there would be no potential for increased runoff into the lake from alteration of drainage patterns.

## Construction

During construction, erosion and transportation of soil particles due to stormwater runoff could occur at the project sites. As discussed under Impacts HY-1 and HY-2, the erosion and sediment control plan for the project would contain best management practices to reduce construction-related stormwater discharges, which may include the installation of silt fencing, fiber rolls, or geotextiles, per the substantive requirements of article 4.2 of the San Francisco Public Works Code. Additionally, as addressed under Impact HY-1, the SFPUC would implement SFPUC Standard Construction Measure 3 (Water Quality), which requires the implementation of site-specific erosion and sediment controls (e.g., fiber rolls and/or gravel bags around storm drain inlets, silt fences) tailored to the project, that would prevent discharges of sediment into storm drains and all surface waters during construction. This measure, in combination with compliance with permit requirements as further described under Impact HY-1, would minimize potential for erosion and siltation. As such, impacts associated with alteration of existing drainage patterns would be less than significant. No mitigation would be required.

## Operation

Upon completion of construction, disturbed areas along the pipeline alignment would be restored to match approximate pre-construction conditions. Collectively, the new emergency pump stations would entail impermeable surface area totaling approximately 16,450 feet. Other aboveground infrastructure (i.e., aboveground cabinets and fire hydrants) would not increase impermeable surfaces because they would be located in existing sidewalks. Given that the total area of impermeable surfaces would be less than 0.25 acre and a portion of the pump station sites is already paved, the small potential increase in runoff at the pump station sites would not be expected to exceed the capacity of the combined sewer system. As noted above, SFPUC would prepare a stormwater control plan that would demonstrate how the project would meet all applicable stormwater performance requirements and describe the best management practices that would be used. The new emergency pump stations would not impede flood flows or substantially alter drainage patterns because the existing sites are level and not in a flood risk zone. Pump station operations would require the use and storage of hazardous materials such as fuels and lubricants, but as discussed in Section E.18(a), Hazards and Hazardous Materials, all hazardous materials would be stored and used in accordance with applicable regulations and would not be a source of polluted runoff. Thus, the project would not result in an increase in stormwater discharge or polluted runoff. Operations and maintenance activities could require excavation for repairs to subsurface infrastructure; however, all such work would be performed in compliance with the water quality regulations and SFPUC Standard Construction Measure 3 (Water Quality) as discussed above. Impacts related to the alteration of existing drainage patterns or the addition of new impervious surfaces would therefore be less than significant. No mitigation would be required.

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**Impact HY-4: The proposed project would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones. (*Less than Significant*)**

The majority of the project sites are not located within a designated flood hazard zone<sup>160</sup> except for a small portion of the pipeline alignment located within the 100-year flood boundary in Golden Gate Park on 47th Avenue. The pipeline alignment traversing the western portion of Golden Gate Park is situated within a designated tsunami hazard zone, as identified by state tsunami hazard maps.<sup>161</sup> This mapping indicates potential inundation in the event of a tsunami or seiche, based on existing site grades under a worst-case scenario. A 2008 study conducted in support of the Tsunami Annex to San Francisco's *Emergency Response Plan* used probabilistic hazard modeling and estimated that San Francisco may experience a tsunami once every 50 to 60 years.<sup>162</sup>

**Construction**

Sediment and materials excavated during construction would be temporarily stockpiled either onsite or at staging areas for testing and prior to being either reused or disposed of at an appropriate landfill. Soils at the project sites could contain contaminants (see Section E.18, Hazards and Hazardous Materials, for more details). Impact HY-1 analyzes impacts on water quality from construction activities. Construction materials and chemicals would also be stored within appropriate containment systems. With appropriate containment of excavated soil and construction chemicals and the low likelihood that a flood or tsunami would occur during the construction period, the potential for the project to contribute a substantial quantity of pollutants in the event of inundation would be less than significant. No mitigation would be required.

**Operation**

No soil stockpiles or construction chemicals would remain permanently on any project site during operation of the project. Project operation would not include the storage or use of any additional hazardous materials not already stored and used at existing SFPUC facilities or substantially increase the use of hazardous materials used for routine maintenance. In addition, storage of hazardous materials such as fuels must be designed to have containment systems that accommodate both the 100-year storm and the total volume of fuel in case of a spill. Therefore, the project would not risk the release of pollutants resulting from project inundation in flood hazard zones. Therefore, the potential for project operation to contribute a substantial quantity of pollutants in the event of inundation would be less than significant. No mitigation would be required.

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**Impact HY-5: The proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (*Less than Significant*)**

As discussed under Impact HY-1, project-related stormwater for the vast majority of the project area would flow into the combined sewer system and would be required to meet the standards contained in the National Pollutant Discharge Elimination System permit for the Oceanside Plant as well as SFPUC's stormwater management requirements before discharge into the Pacific Ocean. The Lake Merced Pump Station site is

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160 San Francisco Public Utilities Commission, 100-Year Storm Flood Risk Map, July 2022, <https://sfplanninggis.org/floodmap/>, accessed August 8, 2024.

161 California Department of Conservation, 2020/2022, CGS Information Warehouse: Tsunami Hazard Area Map. [https://maps.conservation.ca.gov/cgs/informationwarehouse/ts\\_evacuation/](https://maps.conservation.ca.gov/cgs/informationwarehouse/ts_evacuation/) accessed August 8, 2024.

162 City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, Tsunami Annex, May 2017, [https://www.sf.gov/sites/default/files/2022-06/CCSF%20Emergency%20Response%20Plan\\_April%202008%20-%20updated%20May%202017\\_Posted.pdf](https://www.sf.gov/sites/default/files/2022-06/CCSF%20Emergency%20Response%20Plan_April%202008%20-%20updated%20May%202017_Posted.pdf), accessed August 8, 2024.

the only area that is not within the combined system, and stormwater from that site flows into Lake Merced. Standard best management practices would be implemented to control construction site runoff and reduce the discharge of pollutants to both the combined system and separate storm drain systems from stormwater runoff. As part of compliance with regulatory requirements during ground-disturbing or other project construction activities, implementation of water quality control measures and best management practices would ensure that water quality standards would be met, including the water quality objectives that protect designated beneficial uses of surface and groundwater, as defined in the basin plan. As analyzed under Impact HY-1, compliance with permit requirements would require the implementation of best management practices for erosion control that would minimize potential discharges containing sediment and contaminants to meet water quality objectives. The project would not obstruct the implementation of a water quality control plan, and impacts would be less than significant. No mitigation would be required.

As the project would not adversely affect groundwater supplies, it would not conflict with any sustainable groundwater management plan. If groundwater is encountered during project construction, SFPUC would be required to meet certain water quality standards before groundwater is discharged into the combined sewer system. As discussed under Impact HY-2, the project would not permanently or substantially deplete groundwater resources during construction, nor would it significantly prevent groundwater recharge during operations. For these reasons, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. As a result, the impact on implementation of water quality control plan or on a groundwater management plan would be less than significant. No mitigation would be required.

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**Impact C-HY-1: The proposed project, in combination with cumulative projects, would not result in a significant cumulative impact on hydrology and water quality. (*Less than Significant*)**

The geographic scope for potential cumulative impacts on hydrology and water quality encompasses the project area and water bodies that could be affected by activities in the project area. All of the identified cumulative projects would fall within this geographic scope.

**Water Quality, Water Quality Standards, and Waste Discharge Requirements**

Construction and operational activities associated with the cumulative projects located within the geographic scope of the project area would generate runoff that would either drain directly to the Pacific Ocean or to Lake Merced, which ultimately drains to the ocean, or drain into the combined sewer system, where water is treated and ultimately discharged into the Pacific Ocean.

Cumulative projects could increase pollution in the ocean through erosion and sedimentation from construction site activities, stormwater runoff to the storm drain system and waterways, accidental releases of chemicals and fuels, or discharges of dewatered groundwater. Cumulative projects would all be subject to applicable water quality regulatory requirements and be required to comply with local regulations, such as article 4.2 of the San Francisco Public Works Code, which requires an erosion and sediment control plan or the Construction General Permit for projects that disturb more than 1 acre. The erosion and sediment control plan and Construction General Permit would require implementation of best management practices for managing construction wastewater and stormwater runoff. These best management practices may include use of straw wattles, sandbags, and silt fencing that would control erosion and sedimentation during construction and prevent discharge of soils into stormwater runoff. Compliance with regulatory requirements and permits would minimize potential impacts on water quality. Therefore, the proposed

project, in combination with cumulative projects, would not result in a significant cumulative impact on water quality.

## Groundwater

Groundwater dewatering could be required during the construction of cumulative projects. Dewatering of groundwater associated with the construction of cumulative projects would not involve sufficient volumes or be at sufficient depths to deplete groundwater resources in the project vicinity. This would be the case because any cumulative effects related to lowering the water table from dewatering would be temporary and localized and would therefore not substantially deplete groundwater resources during cumulative project construction. The cumulative projects would be subject to the same groundwater dewatering requirements as the proposed project, and groundwater dewatering would only occur during construction. Minimal groundwater dewatering of vaults could occur during project operation but would not be of sufficient volumes to contribute to any long-term effects on groundwater supplies. Therefore, the proposed project, in combination with other projects, would not result in a significant cumulative impact on groundwater recharge and supplies.

## Stormwater and Flood Flows

The cumulative projects in the project area could increase the amount of impervious surfaces in the project vicinity (which is largely developed with impervious surfaces already) and intensify various types of land uses. Although cumulative projects such as the Stonestown, Parkmerced and St. Ignatius projects primarily involve new facilities that would replace existing structures, this development could lead to a cumulative increase in stormwater generation and an increase in polluted runoff and stormwater discharges. The cumulative projects would implement best management practices as required by an erosion and sediment control plan or the Construction General Permit and low-impact development measures to reduce the flow rate and volume of stormwater entering the combined sewer system. These measures would reduce the frequency of combined sewer overflows, thereby minimizing flooding effects and protecting water quality. Furthermore, the cumulative projects would not change the existing topography of the project sites such that flood flows would be redirected. Therefore, the proposed project, in combination with the identified cumulative projects would not result in a significant cumulative impact on stormwater drainage systems and flood flows.

## E.18 Hazards and Hazardous Materials

| Topics:                                                                                                                                 | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>HAZARDS AND HAZARDOUS MATERIALS.</b> Would the project                                                                               |                                |                                                    |                                     |                          |                          |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Topics:                                                                                                                                                                                                                                                                             | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 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?                                                                                     | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?                                                                                                                     | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| 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?                                                      | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| 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 or excessive noise for people residing or working in the project area? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                           | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?                                                                                                                                            | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The project area is not within an area covered by an airport land use plan or within 2 miles of a public airport or a public use airport, nor would the project be located in or near wildlands. Therefore, topics E.18(e) and E.18(g) would not apply to the project and are not discussed further.

**Impact HZ-1: The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (*Less than Significant*)**

### Construction

Project construction would require the routine use of hazardous materials such as fuels, lubricants, paints, and solvents for motorized heavy equipment such as excavators, bulldozers, and backhoes. During construction, minor maintenance activities and equipment and vehicle refueling (from mobile or stationary fuel supply sources) could occur at the project sites. If not managed responsibly, the routine transport, use, and disposal of hazardous materials could pose a risk to human health or the environment. For example, hazardous materials would have the potential to spill accidentally during maintenance, refueling, or



servicing of equipment and vehicles. Improperly disposed, spilled, or leaking hazardous materials could create a significant hazard to workers, the public, or the environment.

Hazardous materials handling, disposal, and transportation would take place in accordance with applicable federal, state, and local regulations. Specifically, hazardous materials handling would be conducted in accordance with title 29, section 1910 of the Code of Federal Regulations, whereas transportation of hazardous materials would comply with the Resource Conservation and Recovery Act and U.S. Department of Transportation regulations. The act also governs hazardous material disposal, thus ensuring that only facilities permitted to accept a specific waste are used by the project.

In addition to complying with mandatory regulatory requirements, potential impacts would be further reduced by implementing SFPUC Standard Construction Measure 6 (Hazardous Materials), which specifies measures to prevent the release of hazardous materials used during construction. Such measures include storing hazardous materials pursuant to manufacturer recommendation, maintaining spill kits onsite, and containing any spills that occur to the extent safe and feasible, followed by collection and disposal in accordance with applicable laws. SFPUC Standard Construction Measure 6 (Hazardous Materials) also specifies that the SFPUC must report spills of reportable quantity to applicable agencies. Compliance with regulatory requirements and implementation of SFPUC Standard Construction Measure 6 (Hazardous Materials) would minimize potential impacts related to the routine transport, use, or disposal of hazardous materials and reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As a result, impacts related to the use or transport of hazardous materials during construction would be less than significant. No mitigation would be required.

## Operation

Project operations would include storage and use of hazardous materials as well as hazardous waste transport associated with vehicles and maintenance or other industrial operations, similar to existing SFPUC operations throughout San Francisco. The waste transport would include periodic pick-up and drop-off of hazardous materials, such as fuel. Hazardous materials would be stored in the new aboveground fuel storage tanks at both of the emergency pump stations, both of which would contain about 30,000 gallons of fuel and be approximately 15 feet in diameter, 30 feet long, and 16 feet tall. At the Lake Merced Pump Station, fuel would be used and stored similar to existing conditions.

Hazardous waste generated by project operation may include used oils, fuels, diesel, hydraulic fluids, coolants, and lubricants from machines. However, the project would comply with the Resource Conservation and Recovery Act; U.S. Department of Transportation; California Department of Toxic Substances Control; Title 22 of the California Code of Regulations; and California Health and Safety Code Division 20, Chapter 6.5 for the handling, transport, and disposal of hazardous materials. Chapter 6.95 of the California Health and Safety Code requires that any business that handles, stores, or disposes of a hazardous substance at a given threshold quantity must prepare a site-specific hazardous materials business plan. Hazardous materials business plans are intended to minimize hazards to human health and the environment from fires, explosions, or an unplanned release of hazardous substances into air, soil, or surface water. The SFPUC would be required to update or prepare a new hazardous materials business plan, which would contain an inventory of hazardous materials at facilities; emergency response plans and procedures to be followed if a hazardous material release occurred; training requirements for employees; and a site map that shows evacuation staging areas, hazardous material handling and storage areas, and emergency response equipment locations. The SFPUC would also continue to comply with the substantive requirements of article

21 of the San Francisco Health Code, which regulates the use and handling of hazardous materials and waste. Under article 21, any business that exceeds certain hazardous materials criteria specified in section 1110 of the San Francisco Health Code must obtain and keep a hazardous materials certificate and implement a hazardous materials management plan.

The plan describes hazardous materials present onsite and required hazardous materials management and control procedures to protect workers from potential health and physical hazards from the accidental release of hazardous materials. Article 21 incorporates the requirements of Chapter 6.95 California Health and Safety Code for hazardous business plans. The project would comply with these requirements for activities such as maintenance of infrastructure components, including pipeline, pump, and motor equipment, and material storage. Therefore, project operation would not pose substantial public health or safety hazards resulting from routine use, transport, or disposal of hazardous materials. As a result, the impact relative to the creation of a significant hazard during operation would be less than significant. No mitigation would be required.

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**Impact HZ-2: The proposed project would not 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. (*Less than Significant*)**

This impact discussion focuses on hazardous building materials, exposure to contaminated soil or groundwater, naturally occurring asbestos, and the use of hazardous materials during construction and operation of the project. Impacts related to work at identified hazardous materials sites are discussed under Impact HZ-4.

## **Construction**

### ***Hazardous Building Materials***

Project construction activities would involve excavation and trenching to install approximately 16 miles of pipeline and associated appurtenances as well as pump station upgrades and two new emergency pump stations at existing SFPUC facilities. Potential hazardous materials in demolition debris may include asbestos-containing materials (such as noise-reducing ceiling tiles), lead-based paint, mercury-containing components (e.g., lamps, switches, and thermostats), and other hazards commonly found in older building materials and infrastructure. If such hazardous materials were present during construction, demolition could result in a release of airborne particles to the environment.

**Asbestos Containing Materials.** The California Department of Toxic Substances Control considers asbestos hazardous, and removal of asbestos containing materials is required prior to demolition or construction activities that could result in disturbance of these materials. Asbestos-containing materials must be removed in accordance with local and state regulations, Bay Area Air District, the California Occupational Safety and Health Administration (Cal OSHA), and California Department of Health Services requirements.

Specifically, Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. The California legislature vests the Bay Area Air District with the authority to regulate airborne pollutants, including asbestos, through both inspection and law enforcement, and the Bay Area Air District is to be

notified 10 days in advance of any proposed demolition or abatement work. Any asbestos-containing material disturbance at the project site would be subject to the requirements of Bay Area Air District Regulation 11, Rule 2: Hazardous Materials—Asbestos Demolition, Renovation, and Manufacturing. The local office of Cal OSHA must also be notified of asbestos abatement to be carried out. Asbestos abatement contractors must follow state regulations contained in Title 8 of California Code of Regulations Section 1529 and Sections 341.6 through 341.14, where there is asbestos related work involving 100 gross square feet or more of asbestos containing material. The owner of the property where abatement is to occur must have a Hazardous Waste Generator Number assigned by and registered with the Office of the California Department of Health Services. The contractor and hauler of the material are required to file a Hazardous Waste Manifest that details the hauling of the material from the site and the disposal of it. Although no buildings known to contain asbestos are planned for demolition, these established regulations and procedures would ensure that if asbestos is encountered, any potential impacts due to asbestos would be reduced to a less-than-significant level. Therefore, no mitigation measures are necessary.

**Lead-Based Paint.** Work that could result in disturbance of lead paint must comply with Section 3426 of the San Francisco Building Code, Work Practices for Lead-Based Paint on Pre-1979 Buildings and Steel Structures. Where there is any work that may disturb or remove lead paint on the exterior of any building built prior to 1979, Section 3426 requires specific notification and work standards, and identifies prohibited work methods and penalties. (The reader may be familiar with notices commonly placed on residential and other buildings in San Francisco that are undergoing re-painting. These notices are generally affixed to a drape that covers all or portions of a building and are a required part of the Section 3426 notification procedure.)

Section 3426 applies to the exterior of all buildings or steel structures on which original construction was completed prior to 1979 (which are assumed to have lead-based paint on their surfaces, unless demonstrated otherwise through laboratory analysis), and to the interior of residential buildings, hotels, and childcare centers. The ordinance contains performance standards, including establishment of containment barriers, at least as effective at protecting human health and the environment as those in the U.S. Department of Housing and Urban Development Guidelines (the most recent Guidelines for Evaluation and Control of Lead-Based Paint Hazards) and identifies prohibited practices that may not be used in disturbances or removal of lead-based paint. Any person performing work subject to the ordinance shall, to the maximum extent possible, protect the ground from contamination during exterior work; protect floors and other horizontal surfaces from work debris during interior work; and make all reasonable efforts to prevent migration of lead paint contaminants beyond containment barriers during the course of the work. Clean-up standards require the removal of visible work debris, including the use of a High Efficiency Particulate Air Filter vacuum following interior work.

The ordinance also includes notification requirements and requirements for signs. Prior to the commencement of work, the responsible party must provide written notice to the Director of DBI, of the address and location of the project; the scope of work, including specific location within the site; methods and tools to be used; the approximate age of the structure; anticipated job start and completion dates for the work; whether the building is residential or nonresidential, owner-occupied or rental property; the dates by which the responsible party has fulfilled or will fulfill any tenant or adjacent property notification requirements; and the name, address, telephone number, and pager number of the party who will perform the work. Further notice requirements include a Posted Sign notifying the public of restricted access to the work area, a Notice to Residential Occupants, Availability of Pamphlet related to protection from lead in the

home, Notice of Early Commencement of Work (by Owner, Requested by Tenant), and Notice of Lead Contaminated Dust or Soil, if applicable.

Demolition would also be subject to the Cal OSHA Lead in Construction Standard (8 CCR Section 1532.1). This standard requires development and implementation of a lead compliance plan when materials containing lead would be disturbed during construction. The plan must describe activities that could emit lead, methods that will be used to comply with the standard, safe work practices, and a plan to protect workers from exposure to lead during construction activities. Cal/OSHA would require 24-hour notification if more than 100 square feet of materials containing lead would be disturbed.

Implementation of procedures required by Section 3426 of the San Francisco Building Code and the Lead in Construction Standard would ensure that potential impacts of demolition or renovation of structures with lead-based paint would be less than significant. Therefore, no mitigation measures are necessary.

**Polychlorinated Biphenyls (PCB's) Light Ballasts.** All light ballasts manufactured through 1978 contain PCBs. Installation of ballasts manufactured prior to 1978 continued for several more years. As a result, it can be expected that any building constructed before 1980 that has not had a complete lighting retrofit is likely to have PCB containing ballasts. Therefore, unless the ballast is electronic (this type is PCB free), determined by testing not to contain PCBs, or the manufacturers label on the ballast states "No PCBs", it is assumed all light ballasts on this site contain PCBs, and must be handled as a hazardous waste. Any ballast containing PCBs is required to be removed by personnel trained in PCB-related work (inspection, removal, clean-up). All workers must also follow OSHA regulations governing the removal and handling of PCB products including Code of Federal Regulations (CFR) Title 29 Section 1910.120 – Hazardous Waste Operations and Emergency Response and 8 CCR Title 8 Section 5192 - Hazardous Waste Operations and Emergency Response as well as other applicable federal, state and local laws and regulations. These existing regulations and abatement procedures would reduce potential impacts of light ballasts with PCBs to a less-than-significant level.

**Mercury Lamps and Switches.** Fluorescent tubes and several other types of lamps (not incandescent light bulbs) contain a small amount of mercury that is necessary for their operation. Currently, most fluorescent lamps contain enough mercury to be a hazardous waste. Spent lamps typically contain concentrations of mercury exceeding the established Total Threshold Limit Concentration and/or the Soluble Threshold Limit Concentration values. Therefore, these lamps must be sent to an authorized recycling facility or to a universal waste consolidator for shipment to an authorized recycling facility. Any lamp that is not designated for recycling or continued use in a different fixture for which the lamp is manufactured for use must be handled, managed, and disposed of as a hazardous waste in accordance with Cal/EPA Title 22. Thermostat switches that contain mercury are considered a hazardous waste if removed and must also be disposed of in accordance with Cal/EPA Title 22. These existing regulations and abatement procedures would reduce potential impacts of mercury to a less-than-significant level.

For reasons stated above, the project would not result in a significant hazard to the public or environment from the release of hazardous building materials. The impact would be less than significant. No mitigation is required.

### ***Exposure to Potentially Contaminated Soil or Groundwater***

Project construction would require excavation of approximately 261,000 cubic yards of soil. Project construction may encounter hazardous materials in soil and groundwater and soils would be tested for reuse on site. If any contaminated soils are identified, they would be handled and disposed of in accordance with

state and federal regulations. Contaminated excavated soil would be hauled to an appropriately licensed disposal facility.

The SFPUC has adopted standard construction measures, with the purpose of ensuring that environmentally responsible practices are applied to all SFPUC projects. Standard Construction Measure 6 (Hazardous Materials) would require SFPUC to assess the project area for any hazardous material and prepare a plan for its removal according to all applicable local, state, and federal regulations. This plan would avoid any adverse exposure to the material during and after construction. In addition, the SFPUC must comply with city, state, and federal regulations that govern the handling, storage, transportation, and disposal of hazardous materials.

In accordance with SFPUC Standard Construction Measure 6 (Hazardous Materials), if there is a possibility of hazardous materials in the soil or groundwater at a project site, the SFPUC shall assess the site in accordance with local regulations (e.g., the Maher Ordinance administered by the San Francisco Department of Public Health), or standard practices such as *Phase I*<sup>163</sup> and *Phase II*<sup>164</sup> environmental site assessments. If hazardous materials are identified or disturbed, the SFPUC must implement a plan for safe handling, treatment, or removal to prevent exposure during and after construction, following all relevant regulations. For sites in areas that the San Francisco Department of Public Health identified as potentially containing hazardous substances, the SFPUC must comply with substantive requirements of the Maher Ordinance, which includes preparing a site history report, conducting sampling if necessary, and developing a site mitigation plan if hazardous substances exceed safety levels. The site mitigation plan must outline measures for handling contaminated materials, protecting public health, and controlling construction-related risks such as dust and runoff. A regulatory agency database search was conducted for the project area. No hazardous materials sites were identified along the pipeline alignment.<sup>165</sup> However, two Cortese list sites were identified within the project area (one which is closed and one which is in remediation), as discussed in more detail under Impact HZ-4 below.

As discussed under Impact HY-4 in Section E.17, Hydrology and Water Quality, a small portion of the pipeline alignment (in Golden Gate Park on 47th Avenue) is within a 100-year storm flood zone, as designated by SFPUC Storm Flood Risk Map.<sup>166</sup> Stockpiling of contaminated soil within the flood zone during construction could create a significant hazard to the public or the environment if this portion of the project site was inundated and contaminated soil was released into the surrounding environment. However, contaminated soil is not expected to be encountered in Golden Gate Park near the flood zone. In addition, on-site stockpiling would be limited, and at the end of each day, excess excavated soil would be transported and stockpiled at staging areas for testing and reuse for the project or transported for disposal at an appropriate landfill. Compliance with regulatory requirements (i.e., Maher Ordinance) would reduce the project's potential to create a significant hazard to the public or the environment.

Through compliance with SFPUC standard construction measures and state and federal regulations, the SFPUC would assess the potential for site contamination prior to construction and would handle potential

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163 A Phase I Environmental Site Assessment is a study that evaluates a property's potential for environmental contamination.

164 If a site has a potential to contain contaminants, a Phase II Environmental Site Assessment aims to confirm whether contamination is indeed present at the site and to what extent. The assessment typically includes sampling of soil and/or groundwater.

165 DTSC, EnviroStor Database – Cortese List: Hazardous Waste and Substances Site List (pursuant to Government Code Section 65962.5[a]), [https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site\\_type=CSITES.FUDS&status=ACT.BKLG.COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29](https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES.FUDS&status=ACT.BKLG.COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29), accessed June 17, 2025.

166 SFPUC, 100-Year Storm Flood Risk Map, December 2024, <https://www.sfpuc.gov/learning/emergency-preparedness/flood-maps>, accessed October 15, 2025.



hazardous material in accordance with all applicable regulatory requirements. Therefore, the project would not result in a significant hazard to the public or environment from the release of hazardous demolition materials. As a result, the impact relative to such releases would be less than significant. No mitigation would be required.

### ***Naturally Occurring Asbestos***

Naturally occurring asbestos can be associated with Franciscan ultramafic rocks containing *serpentine*<sup>167</sup> or Franciscan *mélange*.<sup>168</sup> The project area is primarily underlain by dune sands, and excavation for the project would also extend into the Colma Formation.<sup>169</sup> These are sedimentary deposits that would not contain naturally occurring asbestos, and no bedrock with Franciscan ultramafic rocks would be encountered during construction. Therefore, there would be no excavation into soil containing naturally occurring asbestos, and impacts related to exposure to naturally occurring asbestos would be less than significant. No mitigation would be required.

### ***Use of Hazardous Materials***

As discussed under Impact HZ-1, project construction would require the use of hazardous materials such as fuels, lubricants, paints, and solvents for motorized heavy equipment, including excavators, bulldozers, and backhoes. Minor maintenance activities and refueling of equipment and vehicles from mobile or stationary fuel supply sources could occur at the project sites. If not properly managed, hazardous materials have the potential to be released or spilled accidentally during maintenance, refueling, or servicing of equipment and vehicles. Improperly disposed of, spilled, or leaking hazardous materials could create a significant hazard to workers, the public, or the environment.

However, the project must comply with federal, state, and local regulations regarding the handling, disposal, and transportation of hazardous materials, including the federal Resource Conservation and Recovery Act and U. S. Department of Transportation regulations. In addition to complying with mandatory regulatory requirements, SFPUC would further reduce potential impacts by implementing SFPUC Standard Construction Measure 6 (Hazardous Materials), which specifies measures to prevent the release of hazardous materials used during construction. Such measures include storing hazardous materials pursuant to manufacturer recommendation, maintaining spill kits onsite, and containing any spills that occur to the extent safe and feasible, followed by collection and disposal in accordance with applicable laws. The SFPUC Standard Construction Measure 6 (Hazardous Materials) also specifies that the SFPUC must report spills of reportable quantity to applicable agencies. Compliance with regulatory requirements and implementation of SFPUC Standard Construction Measure 6 (Hazardous Materials) would minimize potential impacts related to the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As a result, the impact on the public or the environment from accidental releases would be less than significant. No mitigation would be required.

### **Operation**

As stated under Impact HZ-1, project operation would include the use of new aboveground fuel storage tanks for storage of fuels, oils, and diesel, similar to existing conditions at SFPUC pump stations. The project would

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167 Serpentine is a naturally occurring group of minerals that can be formed when ultramafic rocks are metamorphosed during uplift to the earth's surface. Serpentine is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramafic rock along earthquake faults. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, are common in serpentine.

168 Mélange is a mixture of rock materials of differing sizes and types typically contained within a sheared matrix

169 Walker et al., 2022.



comply with the Resource Conservation and Recovery Act, U.S. Department of Transportation, California Department of Toxic Substances Control, Title 22 of the California Code of Regulations, and California Health and Safety Code Division 20, Chapter 6.5 for the handling, transport, and disposal of hazardous materials.

In accordance with Chapter 6.95 of the California Health and Safety Code, the SFPUC would update its existing hazardous material business plan to reflect new aboveground fuel storage tanks and to ensure that hazardous materials are stored properly and that employees are trained adequately to handle hazardous materials. Under article 21 of the San Francisco Health Code, the SFPUC would be required to prepare and implement a hazardous materials plan that manages the use and handling of hazardous materials and waste at the project site. This plan would require an inventory of hazardous materials at the facility, secondary containment for hazardous materials storage areas, and would include emergency response plans and procedures if a release (or potential release) of a hazardous material occurred, and requirements to train employees in safety procedures.

Implementation of the hazardous materials plan would further minimize the potential for the release of hazardous materials into the environment and provide for the prompt cleanup of any unanticipated releases. As a result, the impact on the public or the environment resulting from a potential hazardous materials release into the environment would be less than significant. No mitigation would be required.

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**Impact HZ-3: The proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (*Less than Significant*)**

### Construction

Construction would not entail hazardous emissions or handling of acutely hazardous materials, but as noted above, would entail handling of hazardous materials such as fuels and solvents that are needed for operation of heavy equipment. A number of schools are located within 0.25 miles of the pipeline alignment, including San Francisco State University, Lowell High School, Lakeshore Alternative Elementary, West Portal Lutheran School, San Francisco Waldorf High School, Diane Feinstein Elementary, Ulloa Elementary, St. Gabriel Catholic Elementary School, A.P. Giannini Middle School, Sunset Elementary School, Holy Name School, St. Ignatius College Preparatory School, Abraham Lincoln High School, Francis Scott Key Elementary, Lawton Alternative School, and Presidio Middle School. In addition, San Francisco State University is within 0.25 mile of Lake Merced Pump Station and the West Portal Lutheran School, St. Stephen's Catholic School and Lowell High School are within 0.25 miles of emergency pump station 1. Abraham Lincoln High School on 24th Avenue and Quintara Street is approximately 500 feet southeast of the new emergency pump station 2 (preferred location) and approximately 1,600 feet southeast of the alternative location (project variant) at the Sunset Reservoir facility.

The SFPUC would handle any hazardous materials and waste at the project sites accordance with local, state, and federal law. Additionally, the project would comply with the federal Resource Conservation and Recovery Act and U. S. Department of Transportation regulations, which address the handling, disposal, and transportation of hazardous materials. In addition to complying with mandatory regulatory requirements, potential impacts would be further reduced by implementing SFPUC Standard Construction Measure 6 (Hazardous Materials), which specifies measures to prevent the release of hazardous materials used during construction. Compliance with federal, state, and local regulations would therefore minimize the potential for project construction to release hazardous emissions that could present a hazard to nearby schools. As a

result, the project construction impact relative to the emission or handling of hazardous materials near schools would be less than significant. No mitigation would be required.

## Operation

As noted above, there are schools located within 0.25 miles of the pump station sites. Pipeline operation would not introduce new hazardous emissions or handling of hazardous materials. Project operations at the Lake Merced Pump Station and new emergency pump stations would include the storage, handling, and disposal of hazardous materials, such as oils, lubricants, and fuels, similar to existing conditions at these SFPUC sites. As discussed under Impact HZ-1, project operations include storage and use of hazardous materials and hazardous waste transport, similar to existing SFPUC operations throughout the city. Hazardous materials, such as fuels, oils, and lubricants, would be properly stored in closed, aboveground tanks or sealed containers with secondary containment. Storage activities would comply with applicable regulations and require routine inspections, maintenance, and spill prevention measures. Tanks and containers will be properly labeled to inform users of potential risks and provide instruction regarding appropriate handling procedures. Operational activities would be required to comply with the federal and state regulatory requirements, including the preparation and implementation of a hazardous materials business plan, to minimize potential for release of hazardous emissions or materials. The project would also comply with substantive requirements of article 21 of the San Francisco Health Code that requires the project to obtain a hazardous materials certificate and implement a hazardous materials plan, as discussed under Impact HZ-1 above. The plan would describe procedures specific to hazardous materials onsite outlining material inventories, emergency procedures, employee training. Compliance with these requirements would minimize the potential for hazardous material releases during project operation. Additionally, as discussed in Section E.8, Air Quality, the project would not expose sensitive receptors, including schools, to substantial pollutant concentrations and would therefore not emit hazardous emissions near a school. As a result, the project operations would not create a significant hazard to the public or schools within 0.25 miles of the project site. The impact would therefore be less than significant. No mitigation would be required.

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### **Impact HZ-4: The proposed project would be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and not create a significant hazard to the public or the environment. (*Less than Significant*)**

Pursuant to Section 65962.5 of the Government Code, the California Environmental Protection Agency (Cal/EPA) maintains a list of hazardous waste and substances sites, commonly referred to as the *Cortese list*. The Cortese list includes hazardous waste sites from the Department of Toxic Substances Control's EnviroStor database, hazardous facilities that are subject to corrective action pursuant to Health and Safety Code section 25187.5, leaking underground storage tank sites from the state water board's Geotracker database, solid waste disposal sites maintained by the state water board, and sites with active cease and desist orders and clean up and abatement orders. Most Cortese sites in San Francisco are on the state water board's list of sites where underground storage tanks existed or still exist. These sites are generally associated with gas stations, autobody shops, and older homes that had underground fuel tanks. The state water board provides regulatory oversight of abatement of unauthorized releases at underground storage tank sites in accordance with state laws and regulations.

There are no open Cortese list sites within the project area.<sup>170</sup> However, two sites associated with the Cortese list are located within the project area; a closed site at the Central Pump Station/Merced Manor Reservoir facility and a site in remediation at the Lake Merced Pump Station. These sites are discussed below.

The Central Pump Station/Merced Manor Reservoir facility is listed in the state water board's Geotracker database as a Leaking Underground Storage Tank site<sup>171</sup> pursuant to California Government Code 65962.5.<sup>172</sup> However, the site investigation and cleanup has been completed and the case is closed.<sup>173</sup> In addition, a portion of the Lake Merced Pump Station site is also included on the Cortese list. The area under remediation is not within the project footprint where ground disturbance activities would occur, but additional information is provided for context. Initial investigations at the site identified fuel-related contamination, which led to the removal of four leaking underground storage tanks and the remediation of contaminated soil and groundwater under the oversight of the San Francisco Department of Public Health. Approximately 400 cubic yards of contaminated soil and 5,800 gallons of impacted groundwater were removed. The state water board issued a letter requesting implementation of interim remedial actions to remove diesel contamination.<sup>174</sup> To address this, a Corrective Action Plan was prepared in May 2024, outlining the plan for the remaining residual free phase diesel in groundwater.<sup>175</sup> The Corrective Action Plan outlines the planned remediation approach, which includes free product removal through a mechanical pumping system installed in open excavation trenches, continued groundwater monitoring, and reporting to the RWQCB. These actions are consistent with General Criterion "f" of the state water board's Low-Threat Underground Storage Tank Case Closure Policy. Site closure will be pursued once all applicable Low-Threat criteria are met. While a significant portion of the contamination has already been addressed, some residual free phase diesel remains in the groundwater. The state water board is overseeing the SFPUC's additional investigation and/or remediation of subsurface hazardous materials, and the oversight would be based on performance standards required by the state.

## Construction

Because the Cortese-listed site at the Central Pump station is fully cleaned up and closed, and the site at the Lake Merced Pump Station is not within the project footprint and the area is in remediation, hazardous materials are not anticipated to be encountered during project construction. The majority of the contamination at the Lake Merced Pump Station has already been addressed, however, should hazardous materials be encountered in soils or groundwater, the SFPUC would implement its Standard Construction Measure 6 (Hazardous Materials) and handle soil and groundwater in compliance with regulations for handling, storage, and disposal of hazardous materials, which would minimize the potential for harmful exposures to the public or the environment. Therefore, the impact would be less than significant.

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- 170 DTSC, EnviroStor Database – Cortese List: Hazardous Waste and Substances Site List (pursuant to Government Code Section 65962.5[a]), [https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site\\_type=CSITES.FUDS&status=ACT.BKLG.COM&report\\_title=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29](https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES.FUDS&status=ACT.BKLG.COM&report_title=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29), accessed June 17, 2025.
- 171 SWRCB, Geotracker website, listing for Central Pump Station, [https://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0607500610](https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0607500610), accessed June 17, 2025.
- 172 CalEPA, Cortese List: Section 65962.5(a), <https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/>, accessed December 12, 2024.
- 173 SF Dept of Public Health, Letter to Mullane, John, General Manager, City/County of San Francisco Water Department, letter from Stephanie Cushing, Senior Environmental Health Inspector, December 13, 1995.
- 174 San Francisco Regional Water Quality Control Board, March 8, 2024. 38-1847 - SF Water/SFPUC Lake Merced - Technical Memorandum Response and Request for Corrective Action Work Plan. GeoTracker, California State Water Resources Control Board. [https://documents.geotracker.waterboards.ca.gov/regulators/deliverable\\_documents/9510526359/38-1847%20SF%20Water-SFPUC%20Tech%20Memo%20Response%20Letter\\_3.8.24.pdf](https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/9510526359/38-1847%20SF%20Water-SFPUC%20Tech%20Memo%20Response%20Letter_3.8.24.pdf), accessed June 24, 2025.
- 175 SFPUC, Corrective Action Plan Underground Storage Tank Case Closure SFPUC Lake Merced Pump Station. May 8, 2024.

## Operation

Project operation would not include excavation or activities that could result in exposure to hazardous materials in soil or groundwater, and therefore would not result in a significant hazard to the public or the environment. Site remediation under the Corrective Action Plan is occurring as a separate project and would be unaffected by project operation.

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**Impact HZ-5: The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (*Less than Significant*)**

## Construction

The San Francisco Emergency Response Plan<sup>176</sup> identifies emergency priority routes throughout the project vicinity. As discussed in TR-1, construction may temporarily affect the transportation network, including emergency access and circulation for pedestrians, cyclists, vehicles, and transit. During pipeline construction, most of the trenching activities and associated staging would occupy the parking lane and one travel lane within city streets along the alignment. Project construction could require temporary closure of city blocks, short detours around these areas would remain readily available for any necessary emergency response or evacuation. In addition, access for emergency vehicles needing to access the blocks undergoing active construction would be maintained by the SFPUC's contractor(s). Temporary closure of a portion of the outermost traffic lane could be necessary for soil improvements along Lake Merced Boulevard. Project construction would increase truck trips on nearby roadways, but not to the extent that would impede emergency vehicle access because section 21806 of the California Vehicle Code requires that drivers yield the right-of-way to emergency vehicles and remain stopped until the emergency vehicle passes.

As discussed in Section E.6, Transportation and Circulation, project construction would comply with the Transportation Agency's Blue Book, which sets forth rules and guidance for work in public rights-of-way to minimize safety hazards and ensure the least possible interference with pedestrian, bicycle, transit, and vehicular traffic. Therefore, the temporary increase in construction vehicle trips would not impede emergency vehicle access. In the event of an evacuation, trained public safety personnel would coordinate detours, with lane closures and routes reviewed by the Transportation Agency and emergency service providers. In the event that evacuation of the city's western portion becomes necessary, any required detours would be quickly identified and implemented. While some localized congestion may occur, construction would not create hazardous conditions or significantly affect accessibility. The project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. As a result, the impact relative to emergency response plans would be less than significant. No mitigation would be required.

## Operation

As discussed in Section E.6, Transportation and Circulation, vehicle trips to and from the project sites would be dispersed throughout the existing street grid, so that there would be no significant adverse impacts on transportation conditions. Furthermore, the project would not permanently alter the existing street network, nor would it introduce any new design features that could impede or hinder the movement of emergency vehicles at the project sites or in the project vicinity. As a result, the project would not interfere with

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176 City and County of San Francisco, Emergency Response Plan, May 2017 [https://www.sf.gov/sites/default/files/2022-06/CCSF%20Emergency%20Response%20Plan\\_April%202008%20-%20Updated%20May%202017\\_Posted.pdf](https://www.sf.gov/sites/default/files/2022-06/CCSF%20Emergency%20Response%20Plan_April%202008%20-%20Updated%20May%202017_Posted.pdf), accessed August 8, 2024.

emergency response or evacuation, and the impact would be less than significant. No mitigation would be required.

**Impact C-HZ-1: The proposed project, in combination with cumulative projects, would not result in a significant cumulative impact related to hazards and hazardous materials. (*Less than Significant*)**

The geographic scope for cumulative impacts related to hazards and hazardous materials would encompass the project area and immediate project vicinity. This geographic scope would include all the identified cumulative projects.

All of the cumulative projects have the potential to result in impacts from the use of hazardous materials for construction and operation. Cumulative projects could involve the handling and transport of contaminated soils and could be located within an area containing contaminated soils and groundwater. Development in the city is subject to City and state controls designed to protect the public and the environment from risks associated with hazards and hazardous materials, and to ensure that emergency access routes are maintained. All of the identified cumulative projects in the study area would be subject to these same laws and regulations. For these reasons, the project would not combine with cumulative projects in the project vicinity to create a significant cumulative impact related to hazards and hazardous materials. As a result, the cumulative impact would be less than significant. No mitigation would be required.

**E.19 Mineral Resources**

| Topics:                                                                                                                                                                | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                | Not Applicable                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|--------------------------|-------------------------------------|
| <b>MINERAL RESOURCES.</b> 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?                                 | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

In accordance with the Surface Mining and Reclamation Act of 1975, the California Department of Conservation, Division of Mines and Geology (California Geological Survey), has mapped non-fuel mineral resources of the state to show where economically significant mineral deposits are either present or likely to occur, based on the best available scientific data. The San Francisco General Plan states that, as a very urban place, San Francisco does not contain mineral resources to any appreciable extent and, as a result, consideration of mineral resources is omitted from the general plan.<sup>177</sup> Furthermore, the San Francisco

177 City and County of San Francisco, San Francisco General Plan, Environmental Protection Element, available online at [https://generalplan.sfplanning.org/16\\_Environmental\\_Protection.htm](https://generalplan.sfplanning.org/16_Environmental_Protection.htm), accessed July 10, 2025.

General Plan does not identify any important mineral resource recovery sites in San Francisco.<sup>178</sup> For these reasons, Topics 19(a) and 19(b) are not applicable to the project and are not discussed further.

## E.20 Energy

| Topics:                                                                                                                                                                           | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact        | No Impact                | Not Applicable           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| <b>ENERGY.</b> Would the project                                                                                                                                                  |                                |                                                    |                                     |                          |                          |
| a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?                                                                                     | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Impact EN-1: The proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation. (*Less than Significant*)**

### Construction

project construction would require the use of fuel- and electric-powered equipment and vehicles. The majority of project construction activities would rely on fuel-powered equipment and vehicles that would consume gasoline or diesel fuel. Heavy construction equipment (e.g., cranes, excavators, backhoes, loaders) and generators would be diesel-powered, while smaller construction vehicles such as pickup trucks would be gasoline-powered. The precise amount of fuel required for project construction is uncertain;<sup>179</sup> however, this analysis presumes that the quantity of gasoline and diesel used for construction equipment, as well as workers' vehicles and haul vehicles, would be comparable to the quantity used for similar construction projects and would not be unusually wasteful or inefficient.

The construction contractor would have a financial incentive to use fuel and energy efficiently because excess usage would increase costs. The San Francisco Clean Construction Ordinance restricts the idling time of all on-road and stationary diesel construction equipment to two minutes, which limits any potential wasteful use of fuel during idling. For projects located in an air pollutant exposure zone, the Clean Construction Ordinance prohibits portable diesel engines where access to electric power is available, which limits unnecessary diesel fuel use. Additionally, for project areas located within an air pollutant exposure zone, the Clean Construction Ordinance requires off-road equipment engines to meet or exceed Tier 2 and operate with the most effective California Air Resources Board verified diesel emission control strategy. Fuel and energy usage during construction would therefore not be wasteful or inefficient. As a result, the impact on energy resources from construction would be less than significant. No mitigation would be required.

<sup>178</sup> San Francisco Planning Department, San Francisco General Plan, June 27, 1996, <https://generalplan.sfplanning.org/>.

<sup>179</sup> During the most intensive year of construction in terms of air pollution emissions, 2028, the operation of off-road construction equipment would consume approximately 115,000 gallons of diesel fuel, assuming the equipment fleet uses diesel fuel. It should be noted that the contractor may use B20 biodiesel instead of diesel, in accordance with the Clean Construction Ordinance.



## Operation

Under normal operations, the project pipelines would act as low-pressure potable water transmission lines for system redundancy, and use of diesel pumps and generator would generally not be required except for when the pumps and generator are exercised. Exercising the pumps and generator would be necessary because mechanical equipment needs to be operated regularly to ensure that it stays in good working order. For maintenance of the project, one vehicle trip per month would be conducted for leak repairs, pressure testing, valve exercising, and other maintenance activities.

Project operation would not cause an inefficient or wasteful use of energy. Maintenance activities for proposed equipment would not substantially alter existing levels of energy usage, and fuel and energy usage during operation would not be unnecessary or wasteful. As a result, the impact on energy resources during project operation would be less than significant. No mitigation would be required.

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### **Impact EN-2: The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (*Less than Significant*)**

State plans for renewable energy and energy efficiency include California's Renewables Portfolio Standard Program (as revised by Senate Bill 100<sup>180</sup>) and the California Energy Efficiency Strategic Plan. The renewables standard program requires utilities to increase their renewable energy generation to 60 percent by 2030 and requires all of the state's electricity to come from carbon-free resources by 2045.<sup>181</sup> The plan, which was developed in 2008, outlines goals to improve the energy efficiency of new construction within all major sectors throughout the state. At a local level, the majority of the City and County of San Francisco's energy-efficiency requirements are geared toward commercial and residential development. The project would use energy-efficient equipment, in compliance with the program and plan, and under normal operating conditions would not increase energy use. Use of diesel pumps and generator during a catastrophic emergency when no other source of energy is available would not be in conflict with plans for renewable energy or energy efficiency, which focus on energy supplies for ongoing operations. The project would not conflict with or obstruct a state or local plans for renewable energy or energy efficiency. The impact would be less than significant. No mitigation would be required.

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### **Impact C-EN-1: The proposed project, in combination with cumulative projects, would not result in significant cumulative impacts related to the wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (*Less than Significant*)**

The geographic scope for potential cumulative impacts on energy resources would consist of the project vicinity as well as the broader region. All of the identified cumulative projects would fall within this geographic scope. Although overall energy demand in California is increasing, commensurate with increasing population, the state also is making concerted energy conservation efforts. Although San Francisco has a substantial demand for energy and fuel, both City and state policies seek to minimize increases in demand through conservation and energy efficiency regulations and policies, so that energy is not used in a wasteful manner.

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180 California Legislative Information, Senate Bill 100, California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, 2018.

181 California Public Utilities Commission, Renewables Portfolio Standard (RPS) Program, 2020.

All current and proposed projects in San Francisco would require the use of fuel and energy for construction and potentially operation. However, all projects would also be required to promote energy efficiency to the extent possible in compliance with all applicable building codes as well as local and state energy efficiency regulations, ordinances, and plans, including the renewables standard program, the California Energy Efficiency Strategic Plan, and City of San Francisco’s energy efficiency standards. Therefore, a significant cumulative impact relative to energy resources or conflicts with state or local plans for renewable energy or energy efficiency would not result (less than significant). No mitigation would be required.

## E.21 Agriculture and Forestry Resources

| Topics:                                                                                                                                                                                                                                                                                                                                      | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                | Not Applicable                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|--------------------------|-------------------------------------|
| <b>AGRICULTURAL AND FORESTRY RESOURCES.</b> Would the project                                                                                                                                                                                                                                                                                |                                |                                                    |                              |                          |                                     |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?                                                                                                          | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use or a Williamson Act contract?                                                                                                                                                                                                                                                          | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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))? (as defined by Government Code section 51104(g))? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Result in the loss of forest land or conversion of forestland to non-forest use?                                                                                                                                                                                                                                                          | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Involve other changes in the existing environment that, because of their location or nature, could result in conversion of farmland to non-agricultural use or forestland to non-forest use?                                                                                                                                              | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The project is located in an urban area in San Francisco that is not agricultural or farmland. No land in San Francisco has been designated by the California Department of Conservation’s Farmland Mapping and Monitoring Program as agricultural land, so there is no farmland map for San Francisco. No land within the city is zoned for agriculture or forest uses<sup>182</sup>; therefore, no agricultural or forestland occurs on the project

182 City of San Francisco. General Plan Land Use Index. 2011.  
[https://generalplan.sfplanning.org/Land\\_Use\\_Index\\_San\\_Francisco\\_General\\_Plan.pdf](https://generalplan.sfplanning.org/Land_Use_Index_San_Francisco_General_Plan.pdf) Accessed December 11, 2024

sites. Because the project area does not contain agricultural or forest uses and is not zoned for such uses, the project would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses; conflict with existing zoning for agricultural land or a Williamson Act contract; or involve any changes to the environment that could result in the conversion of farmland to non-agricultural use or forestland to non-forest use. Therefore, Topics E.21(a), E.21(b), E.21(c), E.21(d), and E.21(e) are not applicable to the project and are not discussed further.

## E.22 Wildfire

| Topics:                                                                                                                                                                                                                                                             | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                | Not Applicable                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|--------------------------|-------------------------------------|
| <b>WILDFIRE.</b> If located in or near state responsibility areas or lands classified as Very High Fire Hazard Severity Zones, would the project                                                                                                                    |                                |                                                    |                              |                          |                                     |
| a) Substantially impair an adopted emergency response plan or emergency evacuation plan?                                                                                                                                                                            | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire??                                                       | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment? | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?                                                                             | <input type="checkbox"/>       | <input type="checkbox"/>                           | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The project is not located in or near a state responsibility area or lands classified as Very High Fire Hazard Severity Zones.<sup>183</sup> Therefore, Topics E.22(a), E.22(b), E.22(c), and E.22(d) are not applicable to the project and are not discussed further.

183 City of San Francisco. Fire Hazard Severity Zones Maps. San Francisco, 2024, <https://sf-fire.org/sites/default/files/2025-03/2024%20San%20Francisco%20Fire%20Hazard%20Severity%20Zones.pdf>

## E.23 Mandatory Findings of Significance

| Topics:                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact                | Not Applicable           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------|------------------------------|--------------------------|--------------------------|
| <b>MANDATORY FINDINGS OF SIGNIFICANCE.</b> Does the project:                                                                                                                                                                                                                                                                                                                                                                                                         |                                |                                                    |                              |                          |                          |
| a) Have the potential to substantially 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 a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |
| b) 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 past projects, the effects of other current projects, and the effects of probable future projects.)                                                                                                                                        | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/>       | <input checked="" type="checkbox"/>                | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |

As discussed in the Initial Study the project would not 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 wildlife community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. As discussed in Section E.4, Cultural Resources and Section E.5, Tribal Cultural Resources, project construction could result in a substantial adverse change in the significance of a cultural or tribal cultural resource or historical resource. Implementation of **Mitigation Measure M-TCR-1: Tribal Cultural Resources Program, Mitigation Measure M-CR-1a: Protection of Sidewalk and Roadway Elements in Historic Districts, Mitigation Measure M-CR-1b: Emergency Pump Station 1 Design for Compatibility with Central Pump Station per Secretary of the Interior’s Standards, Mitigation Measure M-CR-2a: Accidental Discovery, Mitigation Measure M-CR-2b: Archeological Monitoring, and Mitigation Measure M-CR-2c: Archeological Testing** would reduce potential impacts to cultural resources to less than significant. As discussed in Section E.16, Geology and Soils, project construction could directly or indirectly destroy a unique paleontological resource or site. Implementation of **Mitigation Measure M-GE-6: Inadvertent Discovery of Paleontological Resources during Construction** would reduce this impact to a less-than-significant level. Therefore, the project would not substantially reduce the habitat of a species. With implementation of mitigation measures described in Section E, the project would not cause a substantial adverse change in the significance of a cultural resource or tribal cultural resource, eliminate important examples of the major periods of California history or prehistory, nor would it destroy a unique paleontological resource.

Section B.2, Cumulative Context, provides a cumulative project list of reasonably foreseeable projects. The geographic context for the project's cumulative impact analyses is projects within approximately 0.25 miles of the project area. Cumulative impacts for each environmental topic are provided in Sections E.1 through E.22. As discussed throughout Section E, with project mitigation, the project would not result in impacts that are individually limited, but cumulatively considerable.

As discussed in Section E, Evaluation of Environmental Effects, the project is anticipated to result in less-than-significant impacts or less-than-significant impacts with mitigation incorporated for the topics included in the initial study checklist. Where necessary, mitigation measures have been identified to be implemented to reduce impacts to less-than-significant levels. Impact determinations of “no impact” or “less than significant impact” were made for the following environmental issues that could affect human beings directly or indirectly: land use and planning, aesthetics, population and housing, transportation and circulation, air quality, GHG emissions, wind, shadow, recreation, utilities and service systems, public services, biological resources, hydrology and water quality, hazards and hazardous materials, and energy. As noted above, mitigation would reduce impacts on tribal cultural resources, cultural resources and geology (paleontological resources) to less than significant. Potentially significant short-term construction noise and vibration impacts would be reduced to less than significant with implementation of **Mitigation Measure M-NO-1a: Construction Noise Control** and of **Mitigation Measure M-NO-2: Vibration Reduction during Construction**. Potential operational noise impacts would be reduced to less than significant with implementation of **Mitigation Measure M-NO-1b: Operational Noise Analysis and Attenuation of Stationary Noise Sources**.

Potential adverse effects on human beings have been considered as part of the analysis of individual environmental topics in this initial study. As discussed above, the project is expected to have less-than-significant impacts on most of the environmental topics discussed, including air quality. The project could have significant short-term impacts on noise and vibration during construction and operation, but, with the implementation of **Mitigation Measure M-NO-1a: Construction Noise Control**, **Mitigation Measure M-NO-2: Vibration Reduction during Construction** and **Mitigation Measure M-NO-1b: Operational Noise Analysis and Attenuation of Stationary Noise Sources** specified in Sections E.7, Noise, the project would not result in substantial adverse effects, direct or indirect, on human beings.

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## **F. Notice of Intent to Adopt a Mitigated Negative Declaration**

On October 29, 2025, the planning department circulated a Notice of Availability and Intent to Adopt a Mitigated Negative Declaration. The notice was circulated to interested organizations and individuals, property owners and residents within 300 feet of proposed pump stations upgrades or new pumps stations and areas where nighttime construction would occur and published in a newspaper of general circulation. Notices were also posted at multiple locations around the project sites and pipeline alignments. The planning department received a letter of appeal of the preliminary mitigated negative declaration on December 1, 2025 (along with supplemental appeal letters on February 26 and March 12, 2026), and 20 public comment letters. No agency comments were received.

The appeal contends that the PMND fails to adequately address the potential for the proposed dual-purpose emergency water system to fail in the event of a major earthquake, to accommodate new growth in the west side of the City, and potential environmental effects related to dividing the community, aesthetic, cultural resources, tribal cultural resources, transportation, shadow, recreation, geology and soils, flooding, utilities and public services, biological resources, water quality, population and housing, and growth inducement. The appeal letter also expressed opinions about the merits or efficacy of the proposed project as compared to different types of projects, such as an Auxiliary Water Supply System (similar to the existing system present in the eastern part of the city) or ocean pumps. The comment letters raised similar concerns to those raised in the appeal.

Since the publication of the PMND, in consultation with the Recreation and Parks Department, the SFPUC made minor changes in the proposed pipeline alignment for the subsequent phases of the project. Those changes were made to keep construction within public roads within Golden Gate Park and avoid construction on bike or foot paths. Figures in the PMND have been revised to reflect the updated alignment and some minor text changes have been made to reflect the revised alignment.

The concerns raised in the appeal letters are addressed in the department's response memorandum to the appeal. All the topics brought up by the appellant are either not relevant to an evaluation of impacts under CEQA or were analyzed sufficiently in various subsections of Section E of this initial study.

The appeal hearing was held on March 26, 2026, and at the conclusion of the appeal hearing, the Planning Commission adopted motion M-21906, which affirmed the decision to issue a Mitigated Negative Declaration for the proposed project.

The Planning Department's responses to the appellant's concerns both in the appeal response and verbally at the appeal hearing do not change the less-than-significant impact findings of the MND or the determination in the MND that impacts to cultural resources (archaeology and tribal cultural resources), geology and noise would be less than significant with mitigation.



## G. Determination

On the basis of this initial study:

- ☐ 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, no further environmental documentation is required.



Lisa Gibson  
Environmental Review Officer  
for  
Sarah Dennis-Phillips  
Director of Planning  
DATE 4/21/2026

## H. Initial Study Preparers

### **Planning Department, City and County of San Francisco**

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# **APPENDIX A**

## **REVISED DRAFT MITIGATION MONITORING AND REPORTING PROGRAM**

## AGREEMENT TO IMPLEMENT MITIGATION MONITORING AND REPORTING PROGRAM

|                       |                                                                                                                                                                  |                         |                                                                                               |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------|
| <i>Record No.:</i>    | 2023-005928ENV                                                                                                                                                   | <i>Block/Lot:</i>       | 7283/004, 7206/001, 2107/001 (for pump station sites);<br>N/A for pipelines in public streets |
| <i>Project Title:</i> | Westside Potable Emergency Firefighting Water System                                                                                                             | <i>Lot Size:</i>        | various                                                                                       |
| <i>BPA Nos:</i>       | NA                                                                                                                                                               | <i>Project Sponsor:</i> | San Francisco Public Utilities Commission                                                     |
| <i>Zoning:</i>        | Public (pump stations); N/A for pipelines in public streets<br>Height and Bulk District: Open Space (at pump station sites); N/A for pipelines in public streets | <i>Lead Agency:</i>     | San Francisco Planning Department                                                             |
|                       |                                                                                                                                                                  | <i>Staff Contact:</i>   | Timothy Johnston – 628.652.7569                                                               |

The table below indicates when compliance with each mitigation measure must occur. Some mitigation measures span multiple phases. Substantive descriptions of each mitigation measure’s requirements are provided on the following pages in the Mitigation Monitoring and Reporting Program.

|                                                                                                                                                 | Period of Compliance                |                       |                                   |                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|
| Adopted Mitigation Measure                                                                                                                      | Prior to the Start of Construction* | During Construction** | Post--construction or Operational | Compliance with Mitigation Measure Completed? |
| Mitigation Measure M-CR-1a: Protection of Sidewalk and Roadway Elements in Historic Districts                                                   | X                                   |                       |                                   |                                               |
| Mitigation Measure M-CR-1b: Emergency Pump Station Design for Compatibility with Central Pump Station per Secretary of the Interior’s Standards | X                                   |                       |                                   |                                               |
| Mitigation Measure M-CR-2a: Accidental Discovery                                                                                                | X                                   | X                     |                                   |                                               |
| Mitigation Measure M-CR-2b: Archeological Monitoring                                                                                            | X                                   | X                     | X                                 |                                               |
| Mitigation Measure M-CR-2c: Archeological Testing                                                                                               | X                                   | X                     | X                                 |                                               |
| Mitigation Measure M-TCR-1 Tribal Cultural Resources Program                                                                                    |                                     | X                     | X                                 |                                               |
| Mitigation Measure M-NO-1a: Noise Reduction during Construction                                                                                 | X                                   | X                     |                                   |                                               |
| Mitigation Measure M-NO-1b: Operational Noise Analysis and Attenuation of Stationary Noise Sources                                              | X                                   |                       |                                   |                                               |

|                                                                                                   |                                     | Period of Compliance  |                                   |                                               |
|---------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|-----------------------------------|-----------------------------------------------|
| Adopted Mitigation Measure                                                                        | Prior to the Start of Construction* | During Construction** | Post--construction or Operational | Compliance with Mitigation Measure Completed? |
| Mitigation Measure M-NO-2: Vibration Reduction during Construction                                | X                                   | X                     |                                   |                                               |
| Mitigation Measure M-GE-6: Inadvertent Discovery of Paleontological Resources during Construction | X                                   | X                     |                                   |                                               |

NOTES:

\* Prior to any ground disturbing activities at the project site.

\*\* Construction is broadly defined to include any physical activities associated with construction of a development project including, but not limited to: site preparation, clearing, demolition, excavation, shoring, foundation installation, and building construction.

## MITIGATION MONITORING AND REPORTING PROGRAM

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                      | Monitoring and Reporting Program |                                     |                                                                                                                                                                                                                                                                    |
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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Implementation Responsibility        | Mitigation Schedule              | Monitoring/Reporting Responsibility | Monitoring Actions/ Completion Criteria                                                                                                                                                                                                                            |
| MITIGATION MEASURES AGREED TO BY SFPUC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                      |                                  |                                     |                                                                                                                                                                                                                                                                    |
| HISTORIC ARCHITECTURAL/CULTURAL RESOURCES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                      |                                  |                                     |                                                                                                                                                                                                                                                                    |
| <b>Mitigation Measure M-CR-1a: Protection of Sidewalk and Roadway Elements in Historic Districts</b><br>Within historic districts established by ordinance (Article 10 landmarks and Article 11 conservation districts), and/or determined eligible for or on the California Register of Historic Resources and/or the National Register of Historic Places, distinctive sidewalk and roadway elements, namely brick surfacing, brick gutters, gutters lined with former cemetery furniture (broken head and foot stones), granite curbs, cobblestones, railway and streetcar rails, sidewalk lights, and utility plates that appear to be 45 years or older shall be treated as potentially character-defining features of the setting of their respective historic districts. For those locations, historic materials shall be protected in place (preferred method), salvaged and re-installed, or replaced in-kind to match the existing color, texture, material, and character of the feature. | 1. SFPUC EMB<br><br>2. SFPUC CM Team | 1. Design<br><br>2. Construction | 1. SFPUC EMG<br><br>2. SFPUC EMG    | 1. Ensure contract documents require protection in place, salvage and re-installation, or replacement in kind of any historic materials present in sidewalks and roads in historic districts.<br>2. Confirm historic materials are protected, salvaged or replaced |
| <b>Mitigation Measure M-CR-1b: Emergency Pump Station Design for Compatibility with Central Pump Station per Secretary of the Interior's Standards</b><br>The new emergency pump station 1 at the existing Central Pump Station/Merced Manor Reservoir facility shall be designed and constructed in a manner that is in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. Specifically, the new emergency pump station shall be designed to meet Standard #9, which requires that "New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be                                                                                                                                                                                                                                                          | 1. SFPUC EMB                         | 1. Design                        | 1. SFPUC EMG, ERO                   | 1. Ensure design of pump station and cabinets conforms to Secretary of the Interior standards. Submit design for ERO review and approval.                                                                                                                          |



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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Implementation Responsibility | Mitigation Schedule | Monitoring/Reporting Responsibility | Monitoring Actions/ Completion Criteria |
| <p>compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.”</p> <p>In keeping with this standard, the new emergency pump station shall be designed to be compatible with but differentiated from the historic pump station. Design elements shall include rectangular massing and a similar exterior color to the Central Pump Station and its additions. Similar materials and finishes shall be used. The emergency pump station shall be designed so as to not overpower the existing historic building and shall avoid use of industrial or highly reflective exterior materials. The new emergency pump station shall be sited at a sufficient distance from the Central Pump Station and in an appropriate location on the site to allow the historic building’s architecture and character to be evident. Cabinets located along 23rd Avenue shall be designed to minimize their visual intrusion upon the Central Pump Station from the street and sidewalk. The SFPUC shall submit the proposed design of emergency pump station 1 to planning department preservation staff, who shall review and approve to ensure it is in conformance with the Secretary of the Interior’s Standards for the Treatment of Historic Properties.</p> |                               |                     |                                     |                                         |

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Implementation Responsibility                                                                                                                                                                                                                                               | Monitoring and Reporting Program                                                                                                                                    |                                                                                                                                   | Monitoring Actions/ Completion Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p><b>Mitigation Measure M-CR-2a: Accidental Discovery</b></p> <p>Archeological discovery is applicable to the entire project where ground disturbing activities would occur.</p> <p><b>Archeological Awareness.</b> The SFPUC, in consultation with the Environmental Review Officer (ERO), shall retain the services of an archeological consultant approved by the SF Planning Cultural Resources Team to provide archeological awareness training to all work crews who will be involved in ground disturbing activities at the project site. The training shall inform all project contractors, subcontractors and work crew members to be on the alert for evidence of the presence of archeological resource(s), of how to identify the evidence of such a resource(s), and of stop work, resource protection, and notification requirements in the event of suspected discovery of an archeological resource by construction crew members.</p> <p>The SFPUC shall distribute the planning department archeological resource “ALERT” sheet to the project prime contractor; to any project subcontractor (including demolition, excavation, grading, foundation, pile driving, etc. firms); or utilities firm involved in soils-disturbing activities within the project site. Prior to any soils-disturbing activities being undertaken, each contractor is responsible for ensuring that the “ALERT” sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, supervisory personnel, etc. The SFPUC shall provide the ERO with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) confirming that all field personnel have received copies of the Alert Sheet.</p> <p><b>Cultural Sensitivity Training.</b> A representative from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the project at their discretion shall provide a Native American cultural sensitivity training to all work crews who will be involved in ground disturbing activities at the project site.</p> <p><b>Stop Work and Notification Upon Discovery.</b> Should any indication of an archeological resource be encountered during any soils-disturbing activity of the project, the project Head Foreman and/or SFPUC shall immediately notify the ERO and shall immediately suspend any soils-disturbing activities in the vicinity of the discovery until the ERO has determined</p> | <p>1. SFPUC EMB</p> <p>2. SFPUC CM Team (qualified archeologist)</p> <p>3. SFPUC CM Team</p> <p>4. SFPUC CM Team</p> <p>5. SFPUC CM Team (qualified archeologist), in consultation with Native American representative</p> <p>6. SFPUC CM Team (qualified archeologist)</p> | <p>1. Design</p> <p>2. Construction, prior to working on project</p> <p>3. Construction</p> <p>4. Construction</p> <p>5. Preconstruction</p> <p>6. Construction</p> | <p>1. SFPUC EMG</p> <p>2. SFPUC EMG</p> <p>3. SFPUC EMG</p> <p>4. SFPUC EMG, ERO</p> <p>5. SFPUC EMG</p> <p>6. SFPUC EMG, ERO</p> | <p>1. Ensure contract documents include requirements for cultural resources training p and accidental discoveries protocols.</p> <p>2. Monitor that personnel attend training prior to beginning work and sign training sign-in sheet. Maintain file of signature sheets</p> <p>3. Monitor to ensure that the contractor implements measures in contract documents, report noncompliance, and ensure corrective action.</p> <p>4. Submit signed training affidavit to ERO upon project completion.</p> <p>5. Provide Native American representative opportunity to provide training if desired.</p> <p>6. In the event of a potential discovery, ensure contractor suspends activities near discovery, notify the ERO, and mobilize a qualified archeologist to evaluate</p> |

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Implementation Responsibility                                                                 | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria                                                                                                                                        |
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| what additional measures should be undertaken. The ERO may also require that the SFPUC immediately implement a site security program if the archeological resource is at risk from vandalism, looting, or other damaging actions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 7. SFPUC CM Team (qualified archeologist)                                                     | 7. Construction                  | 7. SFPUC EMG, ERO                   | the find and advise ERO as to significance of discovery.<br>7. Preserve resource in place or initiate monitoring, data recovery program and/or interpretive program per below. |
| <p><b>Discovery Identification, Evaluation, and Treatment Determination.</b> If the ERO determines that an archeological resource may be present within the project site, the SFPUC shall retain the services of an archeological consultant archeological consultant approved by the planning department to identify, document, and evaluate the archeological resource. The archeological consultant shall be empowered to temporarily redirect construction crews and heavy equipment until the deposit is evaluated. The archeological consultant shall, after making a reasonable effort to assess the integrity and significance of the encountered archeological deposit, present the findings of this assessment to the ERO.</p> <p>If the ERO determines that a significant archeological resource or tribal cultural resource is present and that the resource could be adversely affected by the project, the ERO, in consultation with the SFPUC, shall determine whether preservation of the resource in place is feasible. If so, the project shall be re-designed so as to avoid any adverse effect on the significant archeological resource and the archeological consultant shall prepare an archeological resource preservation plan, which shall be implemented by the SFPUC during construction. The consultant shall submit a draft preservation plan to the planning department for review and approval. If preservation in place is not feasible, a data recovery program shall be implemented, unless the ERO determines that the archeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.</p> | 8. SFPUC CM Team (qualified archeologist in consultation with Native American representative) | 8. Construction                  | 8. SFPUC EMG, ERO                   | 8. Contact descendant group(s) relevant discovery, in consultation with ERO, and provide opportunity for group(s) to provide recommendations for appropriate treatment.        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9. SFPUC CM Team (qualified archeologist and, Native American representative if so desired)   | 9. Construction                  | 9. SFPUC EMG, ERO                   | 9. Conduct monitoring if requested by ERO. Ensure descendant group(s) are afforded an opportunity to monitor if desired.                                                       |
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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Implementation Responsibility              | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria                                                                                                        |
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| <b>Consultation with Descendant Communities.</b> On discovery of an archeological site associated with descendant Native Americans, the Overseas Chinese, or other potentially interested descendant group an appropriate representative of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archeological field investigations of the site and to offer recommendations to the ERO regarding appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. The ERO and SFPUC shall work with the Native American representative or other representatives of descendant communities to identify the scope of work to fulfill the requirements of this mitigation measure, which may include participation in preparation and review of deliverables (e.g., plans, interpretive materials, artwork). Representatives shall be compensated for their work as identified in the agreed upon scope of work. A copy of the Archeological Resources Report (ARR) shall be provided to the representative of the descendant group. | 11. SFPUC CM Team (qualified archeologist) | 11. Construction                 | 11. SFPUC EMG, ERO                  | 11. If triggered, prepare Archeological Data Recovery Plan (ARDP) for and approval by ERO .                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 12. SFPUC CM Team (qualified archeologist) | 12. Construction                 | 12. SFPUC EMG, ERO                  | 12. Monitor ADRP is implemented.                                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 13. SFPUC CM Team                          | 13. Construction                 | 13. SFPUC EMG, ERO                  | 13. Identify and determine if other project(s) would affect resources in project area, in consultation with the ERO, and conduct coordination. |

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| <p><b>Archeological Data Recovery Program.</b> An archeological data recovery program shall be conducted in accordance with an Archeological Data Recovery Plan (ADRP) if all three of the following apply: 1) a resource has potential to be significant, 2) preservation in place is not feasible, and 3) the ERO determines that an archeological data recovery program is warranted. The project archeological consultant, SFPUC, and ERO shall meet and consult on the scope of the ADRP. The archeological consultant shall prepare a draft ADRP that shall be submitted to the ERO for review and approval.</p> <p>The ADRP shall identify how the proposed data recovery program will preserve the significant information the archeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the project. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.</p> <p>The scope of the ADRP shall include the following elements:</p> <ul style="list-style-type: none"> <li>• Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations.</li> <li>• Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures.</li> <li>• Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies.</li> <li>• Security Measures. Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities.</li> <li>• Final Report. Description of proposed report format and distribution of results.</li> <li>• Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.</li> </ul> | 14. SFPUC CM Team (qualified archeologist)                                                             | 14. Construction      | 14. SFPUC EMG, ERO | 14. Perform required notifications if human remains are discovered, including notify ERO.                                                                                                                     |
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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Implementation Responsibility              | Monitoring and        | Reporting Program                   | Monitoring Actions/ Completion Criteria                 |
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| <p><b>Coordination of Archeological Data Recovery Investigations.</b> In cases in which the same resource has been or is being affected by another project for which data recovery has been conducted, is in progress, or is planned, in order to maximize the scientific and interpretive value of the data recovered from both archeological investigations, the following measures shall be implemented:</p> <ul style="list-style-type: none"> <li>a) In cases where neither investigation has yet begun, both archeological consultants and the ERO shall consult on coordinating and collaboration on archeological research design, data recovery methods, analytical methods, reporting, curation and interpretation to ensure consistent data recovery and treatment of the resource.</li> <li>b) In cases where archeological data recovery investigation is already under way or has been completed for a prior project, the archeological consultant for the subsequent project shall consult with the prior archeological consultant, if available; review prior treatment plans, findings and reporting; and inspect and assess existing archeological collections/inventories from the site prior to preparation of the archeological treatment plan for the subsequent discovery, and shall incorporate prior findings in the final report of the subsequent investigation. The objectives of this coordination and review of prior methods and findings will be to identify refined research questions; determine appropriate data recovery methods and analyses; assess new findings relative to prior research findings; and integrate prior findings into subsequent reporting and interpretation.</li> </ul> | 19. SFPUC CM Team (qualified archeologist) | 19. Post Construction | 19. SFPUC EMG, ERO                  | 19. Provide copy of signed curatorial agreement to ERO. |



| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Implementation Responsibility | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria |
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| <p><b>Human Remains and Funerary Objects.</b> The treatment of human remains and funerary objects discovered during any soil-disturbing activity shall comply with applicable State and Federal laws. This shall include immediate notification of the Office of the Chief Medical Examiner of the City and County of San Francisco (Medical Examiner). The ERO also shall be notified immediately upon the discovery of human remains. In the event of the Medical Examiner’s determination that the human remains are Native American remains, the Medical Examiner shall notify the California State Native American Heritage Commission, which will appoint a Most Likely Descendant (MLD). The MLD will complete his or her inspection of the remains and make recommendations or preferences for treatment within 48 hours of being granted access to the site (Public Resources Code section 5097.98(a)).</p> <p>The landowner may consult with the project archeologist and SFPUC and shall consult with the MLD and ERO on preservation in place or recovery of the remains and any scientific treatment alternatives. The landowner shall then make all reasonable efforts to develop an Agreement with the MLD, as expeditiously as possible, for the treatment and disposition, with appropriate dignity, of human remains and funerary objects (as detailed in CEQA Guidelines section 15064.5(d)). Per PRC 5097.98 (b)(1), the Agreement shall address and take into consideration, as applicable and to the degree consistent with the wishes of the MLD, the appropriate excavation, removal, recordation, scientific analysis, custodianship prior to reinterment or curation, and final disposition of the human remains and funerary objects. If the MLD agrees to scientific analyses of the remains and/or funerary objects, the archeological consultant shall retain possession of the remains and funerary objects until completion of any such analyses unless otherwise specified in the Agreement, after which the remains and funerary objects shall be reinterred or curated as specified in the Agreement.</p> <p>Both parties are expected to make a concerted and good faith effort to arrive at an Agreement, consistent with the provisions of PRC 5097.98. However, if the landowner and the MLD are unable to reach an Agreement, the landowner, ERO, and SFPUC shall ensure that the remains and/or mortuary materials are stored securely and respectfully until they can be reinterred on the property, with appropriate dignity, in a location not</p> |                               |                                  |                                     |                                         |

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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Implementation Responsibility | Mitigation Schedule | Monitoring/Reporting Responsibility | Monitoring Actions/ Completion Criteria |
| <p>subject to further or future subsurface disturbance, consistent with state law.</p> <p>Treatment of historic-period human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity, additionally, shall follow protocols laid out in the project's archeological treatment documents, and in any related agreement established between the Medical Examiner and the ERO. The project archeologist shall retain custody of the remains and associated materials while any scientific study scoped in the treatment document is conducted and the remains shall then be curated or respectfully reinterred by arrangement on a case-by case-basis.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                               |                     |                                     |                                         |
| <p><b>Archeological Findings Report.</b> After the conclusion of project ground disturbing work, the archeological consultant shall submit a written report of the findings to the ERO. If the consultant encountered an archeological resource that was determined to be not significant, the consultant shall prepare an Archeological Monitoring or Testing Result Report (AMRR or ATRR). The report shall document the observed resources, evaluate the significance of the discovered archeological resource, and describe the archeological and historical research methods employed in the archeological programs undertaken. If the consultant encountered an archeological resource that was determined to be significant, the consultant shall prepare an Archeological Resources Report (ARR). This report has the same content as the AMRR or ATRR but includes the methods employed in the data recovery program, data and analysis of the resource, interpretation of the resource, and discusses curation arrangements. Formal site recordation forms (CA DPR 523 series) shall be attached to the ARR as an appendix.</p> <p>Once approved by the ERO, copies of the report shall be distributed as follows: California Historical Resources Information System, Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the approved report to the NWIC. The environmental planning division of the planning department shall receive one (1) bound hardcopy of the report. Digital files that shall be submitted to the environmental division include an unlocked, searchable PDF version of the report, GIS shapefiles of the site and feature locations, any formal site recordation forms (CA DPR 523 series), and/or documentation</p> |                               |                     |                                     |                                         |

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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Implementation Responsibility | Mitigation Schedule | Monitoring/Reporting Responsibility | Monitoring Actions/Completion Criteria |
| for nomination to the National Register of Historic Places/California Register of Historical Resources. The PDF report, GIS files, recordation forms, and/or nomination documentation should be submitted via USB or other stable storage device. If a descendant group was consulted during archeological treatment, a PDF of the report shall be provided to the representative of the descendant group.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |                     |                                     |                                        |
| <b>Interpretative Program.</b> The project archeological consultant shall submit a Cultural Resources Public Interpretative Plan if a significant archeological resource is discovered during a project. As directed by the ERO, a qualified design professional with demonstrated experience in displaying information and graphics to the public in a visually interesting manner, local artists, or community group may also be required to assist the project archeological consultant in preparation of the interpretative plan. If the resource to be interpreted is a tribal cultural resource, the interpretative plan shall be prepared in consultation with and developed with the participation of California Native American tribes traditionally and culturally affiliated with a geographic area of the project. The interpretive plan shall describe the interpretive product(s), locations or distribution of interpretive materials or displays, the proposed content and materials, the producers or artists of the displays or installation, and a long-term maintenance program. The interpretative plan shall be sent to the ERO for review and approval. The interpretive plan shall be implemented prior to completion of project, unless interpretive elements are planned to take place post construction, such as educational events. |                               |                     |                                     |                                        |
| <b>Curation.</b> Significant archeological collections and paleoenvironmental samples of future research value shall be permanently curated at an established curatorial facility or Native American cultural material shall be returned to local Native American representatives at their discretion. The facility shall be selected in consultation with the ERO. Upon submittal of the collection for curation the sponsor or archeologist shall provide a copy of the signed curatorial agreement to the ERO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                               |                     |                                     |                                        |

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| <p><b>Mitigation Measure M-CR-2b: Archeological Monitoring</b></p> <p>Prior to the start of construction of each phase of the project, the SFPUC shall submit an Archeological Monitoring Program as applicable for the geographic areas below. In addition, if the records review/search completed for this project is five years or older, then the SFPUC shall consult with the planning department cultural resources staff to determine if an updated records search and/or other action like an updated pedestrian survey is needed to identify if any new archeological sites were discovered after the publication of this document that may require archeological monitoring in additional locations to those required below.</p> <p>Archeological Monitoring is applicable to areas with high sensitivity for buried Native American and/or historic era resources as follows:</p> <ul style="list-style-type: none"> <li>• Lake Merced Pump Station east to Lake Merced Boulevard, Lake Merced Boulevard between Lake Merced Pump Station and Middlefield Drive, (see below regarding local Native American representative to be present during monitoring at this site) Middlefield Drive between Lake Merced Boulevard and Ocean Avenue, Ocean Avenue between Middlefield Drive to Inverness Drive</li> <li>• Sloat Boulevard between Inverness Drive and 37th Avenue, 37th Avenue between Sloat Boulevard and Vicente Street, and 36th between Sloat Boulevard and Vicente Street</li> <li>• 34th Ave between Vicente Street and Wawona Street, Wawona Street between 34th Avenue and 42nd Avenue, 42nd between Wawona and Vicente Street</li> <li>• Ulloa St between 36th Avenue and 32nd 35th Avenue, <u>Ulloa Street between 32nd Avenue and 33rd Avenue</u></li> <li>• <u>25th Avenue between Judah and Martin Luther King Jr Drive, Martin Luther King Jr Drive between 25<sup>th</sup> Avenue and Transverse Drive, Transverse Drive between Martin Luther King Jr Drive and John F Kennedy Drive</u></li> <li>• <del>Lawton between 23rd Avenue and 21st and 21st Avenue between Lawton and Kirkham Street</del></li> </ul> | 1. SFPUC EMG                              | 1. Preconstruction | 1. SFPUC EMG, ERO | 1. Consult with ERO to determine if an updated records search and/or other action like an updated pedestrian survey is needed to identify if any new archeological sites were discovered before advertising a new phase if more than five years has lapsed since publication of the MND, and perform any ERO-required additional identification efforts. |
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| <ul style="list-style-type: none"> <li>• 43rd Ave between Judah Street and Lincoln Way, Irving St between 42nd Avenue and 37th Avenue, 37th Avenue between Irving St and Lincoln Way, Lincoln Way between 37th Avenue and 42nd Avenue, 36th between Irving Street and Lincoln Way, Martin Luther King Drive to 47th Avenue to Balboa Street</li> <li>• Cabrillo Street between <u>43rd Avenue</u> and 44th Avenue, <u>Cabrillo Street</u> between <u>41st Avenue</u> and 36th Avenue</li> <li>• Clement Street between 44th Avenue and 38th Avenue</li> </ul> <p><b>Archeological Monitoring Program.</b> The purpose of the archeological monitoring program will be to observe soil disturbing construction activities in order to determine if significant archeological resources are present at the project site and to ensure significant archeological resources are appropriately protected or treated. The SFPUC shall retain the services of an archeological consultant approved by the SF Planning Cultural Resources Team.</p> <p>The archeological consultant shall undertake an archeological monitoring program as specified herein. The archeological consultant's work shall be conducted in accordance with this measure at the direction of the ERO in coordination with SFPUC. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the Environmental Review Office (ERO) for review and comment and shall be considered draft reports subject to revision until final approval by the ERO. Reports will be concurrently submitted to SFPUC (i.e., cc'd when sent to the ERO). In addition, the consultant shall be available to conduct data recovery program if required pursuant to this measure. Archeological data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less than significant level potential effects on a significant archeological resource as defined in CEQA Guidelines Sect. 15064.5 (a)(c).</p> <p>A local Native American representative shall be present during archeological monitoring on Lake Merced Boulevard between Middlefield Drive and Winston Drive, at their discretion, because this work is being conducted in close proximity to a recorded Native American archeological site.</p> | <p>5. SFPUC CM Team (qualified archeologist)</p> <p>6. SFPUC CM Team (qualified archeologist)</p> <p>7. SFPUC CM Team (qualified archeologist)</p> <p>8. SFPUC CM Team (qualified archeologist)</p> | <p>5. Preconstruction</p> <p>6. Construction</p> <p>7. Post construction</p> <p>8. Construction</p> | <p>5. SFPUC EMG, ERO</p> <p>6. SFPUC EMG, ERO</p> <p>7. SFPUC EMG, ERO</p> <p>8. SFPUC EMG, ERO</p> | <p>5. Prepare and submit AMP to ERO for review, and implement approved by ERO.</p> <p>6. Collect samples where warranted.</p> <p>7. Submit results of monitoring, including information about collected samples and paleobotanical analysis, if applicable, to ERO for review and approval.</p> <p>8. Implement additional appropriate measures are implemented as required by ERO, and report to ERO.</p> |
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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Implementation Responsibility | Mitigation Schedule | Monitoring/Reporting Responsibility | Monitoring Actions/ Completion Criteria |
| <p><b>Archeological Monitoring Plan.</b> The archeological monitoring program shall be conducted in accordance with the approved Archeological Monitoring Plan (AMP). The archeological consultant and the ERO shall consult on the scope of the AMP, which shall be approved by the ERO prior to any project-related soils disturbing activities commencing. The ERO in consultation with the project archeologist shall determine what project soils disturbing activities shall be archeologically monitored. The AMP shall be submitted first and directly to the ERO for review and comment (with a copy to SFPUC) and shall be considered a draft subject to revision until final approval by the ERO. The archeologist shall implement the monitoring as specified in the approved AMP during construction. The archeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the archeological consultant, determined that project construction activities could have no effects on significant archeological deposits.</p> <p>The AMP shall identify the property types of the expected archeological resource(s) that potentially could be adversely affected by the project, lay out what scientific/ historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions.</p> |                               |                     |                                     |                                         |
| <p><b>Collection During Archeological Monitoring.</b> The monitor is authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. Ecofacts are biological or geological objects or deposits related to human activity, but not manufactured by humans. Examples of ecofactual materials include animal bones, charcoal, plants, and pollen that can tell us about past diet or environments.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                               |                     |                                     |                                         |



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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Implementation Responsibility | Mitigation Schedule | Monitoring/Reporting Responsibility | Monitoring Actions/ Completion Criteria |
| <p><b>Paleoenvironmental Analysis of Paleosols.</b> When a paleosol is identified during monitoring, irrespective of whether cultural material is present, samples shall be extracted and processed for dating, flotation for paleobotanical analysis, and other applicable special analyses pertinent to identification of possible cultural soils and for environmental reconstruction. The results of analysis of collected samples shall be reported on in results reports.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               |                     |                                     |                                         |
| <p><b>Additional Applicable Measures.</b> An Archeological Findings Report shall be prepared to document the required monitoring (even in the absence of discoveries), and if archeological resources are discovered during monitoring the following items identified in <b>Mitigation Measure M-CR-2a: Accidental Discovery</b> shall be implemented as specified in that measure:</p> <ul style="list-style-type: none"> <li>• Discovery Identification, Evaluation, and Treatment Determination</li> <li>• Consultation with Descendant Communities (as applicable)</li> <li>• Archeological Data Recovery Program (as applicable)</li> <li>• Coordination of Archeological Data Recovery Investigations (as applicable)</li> <li>• Human Remains and Funerary Objects (as applicable)</li> <li>• Archeological Findings Report</li> <li>• Cultural Resources Public Interpretation (as applicable)</li> <li>• Curation (as applicable)</li> </ul> |                               |                     |                                     |                                         |

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| <p><b>Mitigation Measure M-CR-2c: Archeological Testing</b></p> <p>Prior to the start of construction of each phase of the project, the SFPUC shall submit an Archeological Testing Program as applicable for the geographic areas below. In addition, if the records review completed for this project is five years or older, then the SFPUC shall consult with the planning department cultural resources staff to determine if an updated records search and/or other action like an updated pedestrian survey is needed to identify if new archeological sites were discovered after the publication of this MND that may require archeological testing in addition to locations required below.</p> <p>Archeological testing is applicable to areas identified as within or in close proximity to known Native American and/or historic era archeological sites at the following locations.</p> <ul style="list-style-type: none"> <li>• Lake Merced Boulevard between Middlefield Drive and Winston Drive. Testing focusing on Native American resources.</li> <li>• Clement Street between 38th Avenue and 32nd Avenue. Testing focusing on resources associated with City Cemetery.</li> </ul> <p><b>Archeological Testing Program.</b> The purpose of the archeological testing program will be to determine to the extent possible the presence or absence of archeological resources and to identify and to evaluate whether any archeological resource encountered on the site constitutes an historical resource under CEQA. The SFPUC shall retain the services of an archeological consultant approved by the Planning Cultural Resources Team.</p> <p>The archeological consultant shall undertake an archeological testing program as specified herein. The archeological consultant's work shall be conducted in accordance with this measure at the direction of the Environmental Review Officer (ERO). All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment and shall be considered draft reports subject to revision until final approval by the ERO. In addition, the consultant shall be available to conduct an archeological monitoring and/or data recovery program if required pursuant to this measure. Archeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to</p> | 1. SFPUC CM Team (qualified archeologist) | 1. Preconstruction | 1. SFPUC EMG      | 1. Prepare testing plan, submit to ERO, implement approved Testing Plan.                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2. SFPUC CM Team                          | 2. Construction    | 2. SFPUC EMG, ERO | 2. Confirm that Native American monitor is present at required locations, at their discretion.                                                                                            |
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| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Implementation Responsibility | Monitoring and Reporting Program |                                     |                                        |
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| <p>reduce to a less than significant level potential effects on a significant archeological resource as defined in CEQA Guidelines Sect. 15064.5 (a)(c).</p> <p>A local Native American representative shall be present during archeological testing on Lake Merced Boulevard between Middlefield Drive and Winston Drive, at their discretion, because this testing is being conducted in close proximity to a recorded Native American archeological site.</p> <p><b>Archeological Testing Plan.</b> The archeological testing program shall be conducted in accordance with the approved Archeological Testing Plan (ATP). The archeological consultant and the ERO shall consult on the scope of the ATP, which shall be approved by the ERO prior to any project-related soils disturbing activities commencing. The ATP shall be submitted first and directly to the ERO for review and comment and shall be considered a draft subject to revision until final approval by the ERO. The archeologist shall implement the testing as specified in the approved ATP prior to and/or during construction.</p> <p>The ATP shall identify the property types of the expected archeological resource(s) that potentially could be adversely affected by the project, lay out what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The ATP shall also identify the testing method to be used, the depth or horizontal extent of testing, and the locations recommended for testing and shall identify archeological monitoring requirements for construction soil disturbance as warranted.</p> <p><b>Paleoenvironmental Analysis of Paleosols.</b> When a submerged paleosol is identified, irrespective of whether cultural material is present, samples shall be extracted and processed for dating, flotation for paleobotanical analysis, and other applicable special analyses pertinent to identification of possible cultural soils and for environmental reconstruction. The results of analysis of collected samples shall be reported on in results reports.</p> <p><b>Additional Applicable Measures.</b> If archeological resources are discovered during monitoring the following items identified in <b>Mitigation Measure M-CR-2a: Accidental Discovery</b> shall be implemented as specified in that measure:</p> |                               |                                  |                                     |                                        |

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Implementation Responsibility                                                                                                                                                                                                                                                                                | Monitoring and Reporting Program                                                                                                                                                                                                                                                                         |                                                                                                     | Monitoring Actions/ Completion Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <ul style="list-style-type: none"> <li>Discovery Identification, Evaluation, and Treatment Determination</li> <li>Consultation with Descendant Communities (as applicable)</li> <li>Archeological Data Recovery Program (as applicable)</li> <li>Coordination of Archeological Data Recovery Investigations (as applicable)</li> <li>Human Remains and Funerary Objects (as applicable)</li> <li>Archeological Findings Report (as applicable)</li> <li>Cultural Resources Public Interpretative Plan (as applicable)</li> <li>Curation (as applicable)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                          |                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>TRIBAL CULTURAL RESOURCES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                          |                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Mitigation Measure M-TCR-1: Tribal Cultural Resources Program</b></p> <p><u>Preservation in Place.</u> In the event of the identification or discovery of a tribal cultural resource, the ERO, the SFPUC, and California Native American tribes traditionally and culturally affiliated with a geographic area of the project, shall consult to determine whether preservation in place would be feasible and effective. If it is determined that preservation-in-place of the tribal cultural resource would be both feasible and effective, then the SFPUC in consultation with local Native American representatives and the Environmental Review Officer (ERO) shall prepare a tribal cultural resource preservation plan (TCRPP). If the tribal cultural resource is an archeological resource of Native American origin, the archeological consultant shall prepare an archeological resource preservation plan (ARPP) in consultation with the local Native American representative, which shall be implemented by the SFPUC during construction. The consultant shall submit a draft ARPP to Planning and the SFPUC for review and approval. If the ERO, in consultation with local Native American representatives and SFPUC determines that preservation-in-place of the tribal cultural resource is not a sufficient or feasible option, then archeological data recovery shall be implemented as required by the ERO and in consultation with affiliated Native American representatives if the tribal cultural resource is an archeological resource of Native American origin.</p> <p><u>Interpretive Program.</u> The SFPUC, in consultation with California Native American tribes traditionally and culturally affiliated with a geographic</p> | <p>1. SFPUC CM Team</p> <p>2. SFPUC CM Team, in consultation with Native American representative</p> <p>3. SFPUC CM Team (qualified archeologist), in consultation with Native American representative</p> <p>4. SFPUC EMG (qualified archeologist), in consultation with Native American representative</p> | <p>1. Construction - after potential tribal cultural resource discovery</p> <p>2. Construction - after ERO determination that preservation in place is feasible</p> <p>3. Construction - after ERO determination that preservation in place is feasible</p> <p>4. Construction and Post-construction</p> | <p>1. SFPUC EMG, ERO</p> <p>2. SFPUC EMG, ERO</p> <p>3. SFPUC EMG, ERO</p> <p>4. SFPUC EMG, ERO</p> | <p>1. SFPUC to notify ERO of a find and consult with ERO and Native American representative.</p> <p>2. Prepare tribal cultural resource preservation plan (TCRPP) , submit to ERO for approval, and implement approved TCRPP.</p> <p>3. Prepare archeological resource preservation plan (ARPP) , submit to ERO for approval, and implement approved ARPP.</p> <p>4. Prepare Tribal Cultural Resources Public Interpretation Plan (TCRPIP), submit to ERO for approval, and</p> |



| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Implementation Responsibility | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria                                                                                                                                   |
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| <p>shall submit a project-specific construction noise control plan to the ERO or the ERO's designee for approval if any of the above construction activities would occur. The construction noise control plan shall be prepared by a qualified acoustical engineer, with input from the construction contractor, and include all feasible measures to reduce construction noise. The construction noise control plan shall discuss the contractor's planned construction activities and identify noise control measures to meet a performance target of construction activities resulting in a noise level less than 90 dBA 1-hour <math>L_{eq}</math>, 10 dBA above the ambient noise level, or an interior level of 45 dBA during nighttime hours at noise-sensitive receptors (residences, hospitals, convalescent homes, schools, churches, and hotels and motels); and daytime construction noise to the performance target of 100 dBA exterior noise level at commercial receptors. The SFPUC shall ensure that the requirement for the construction contractor to submit a noise control plan prepared by a qualified acoustical engineer is included in contract specifications along with the measures listed below.</p> <p>Where nighttime construction is required, the plan shall include specific measures to reduce nighttime construction noise. The plan shall also include measures for notifying the public of construction activities, complaint procedures, and a plan for monitoring construction noise levels in the event complaints are received.</p> <p>The construction noise control plan shall include the following measures to the degree feasible, or other effective measures (as determined by the ERO), to reduce construction noise levels:</p> <ul style="list-style-type: none"> <li>• Use construction equipment that is in good working order, and inspect mufflers for proper functionality;</li> <li>• Select "quiet" construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures);</li> <li>• Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors;</li> <li>• Prohibit the idling of inactive construction equipment for more than five minutes;</li> <li>• Locate stationary noise sources (such as compressors) as far from nearby noise sensitive receptors as possible, muffle such noise</li> </ul> | 4. SFPUC CM Team              | 4. Construction                  | 4. SFPUC EMG, ERO                   | <p>3. Perform required public notifications. Notify ERO of any noise complaints within one week of receiving a complaint.</p> <p>4. Monitor noise levels as required.</p> |



| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Implementation Responsibility | Monitoring and Reporting Program |                                     |                                        |
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| <p>sources, and construct barriers around such sources and/or the construction site.</p> <ul style="list-style-type: none"> <li>• Avoid placing stationary noise-generating equipment (e.g., generators, compressors) within noise-sensitive buffer areas (as determined by the acoustical engineer) immediately adjacent to neighbors.</li> <li>• Enclose or shield stationary noise sources from neighboring noise-sensitive properties with noise barriers to the extent feasible. To further reduce noise, locate stationary equipment in pit areas or excavated areas, if feasible; and</li> <li>• Install temporary barriers, barrier-backed sound curtains and/or acoustical panels around working powered impact equipment and, if necessary, around the project site perimeter. When temporary barrier units are joined together, the mating surfaces shall be flush with each other. Gaps between barrier units, and between the bottom edge of the barrier panels and the ground, shall be closed with material that completely closes the gaps, and dense enough to attenuate noise. The temporary noise barriers in the analysis assumes a noise reduction of 15 dB.</li> </ul> <p>The construction noise control plan shall include the following measures for notifying the public of construction activities, complaint procedures and monitoring of construction noise levels:</p> <ul style="list-style-type: none"> <li>• Designation of an on-site construction noise manager for the project;</li> <li>• Notification of neighboring noise sensitive receptors within 300 feet of the project construction area at least 30 days in advance of high-intensity noise-generating activities (e.g., pier drilling, pile driving, and other activities that may generate noise levels greater than 90 dBA at noise sensitive receptors or 100 dBA at commercial receptors) about the estimated duration of the activity;</li> <li>• A sign posted on-site describing noise complaint procedures and a complaint hotline number that shall always be answered during construction;</li> <li>• A procedure for notifying the planning department of any noise complaints within one week of receiving a complaint;</li> <li>• A list of measures for responding to and tracking complaints</li> </ul> |                               |                                  |                                     |                                        |

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Implementation Responsibility                                                             | Monitoring and Reporting Program           |                                              | Monitoring Actions/ Completion Criteria                                                                                                                                                                                                              |
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| <p>pertaining to construction noise. Such measures may include the evaluation and implementation of additional noise controls at sensitive receptors; and</p> <ul style="list-style-type: none"> <li>Conduct noise monitoring (measurements) at the beginning of major construction phases (e.g., demolition, grading, excavation) and during high-intensity construction activities to determine the effectiveness of noise attenuation measures and, if necessary, implement additional noise control measures.</li> </ul> <p>The construction noise control plan shall include the following additional measures during pile-driving activities:</p> <ul style="list-style-type: none"> <li>When pile driving is to occur within 260 feet of a noise-sensitive receptor, implement “quiet” pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving duration [only if such measure is preferable to reduce impacts to sensitive receptors]) where feasible, in consideration of geotechnical and structural requirements and conditions;</li> <li>Properly fit impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer; and</li> <li>Conduct noise monitoring (measurements) before, during, and after the pile driving activity.</li> </ul> |                                                                                           |                                            |                                              |                                                                                                                                                                                                                                                      |
| <p><b>Mitigation Measure M-NO-1b: Operational Noise Analysis and Attenuation of Stationary Noise Sources</b></p> <p>This measure applies to installation of noise-generating activities or equipment (heating, ventilation, and air conditioning equipment including exhaust fans) at emergency pump stations 1 and 2.</p> <p>Prior to construction at new emergency pump stations 1 and 2, the SFPUC shall submit documentation to the Environmental Review Office (ERO) or the ERO’s designee, demonstrating with reasonable certainty that the proposed design of the heating, ventilation, and air conditioning equipment meets the noise limits specified in section 2909 of the San Francisco Police Code (i.e., an 8 dB increase above the ambient noise level at the property plane for noise from commercial or industrial uses; and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>1. SFPUC EMB</p> <p>2. SFPUC CM Team (qualified acoustical engineer or consultant)</p> | <p>1. Design</p> <p>2. Preconstruction</p> | <p>1. SFPUC EMG</p> <p>2. SFPUC EMG, ERO</p> | <p>1. Ensure design meets requirements for HVAC systems to comply with noise limits specified in section 2909 of the San Francisco Police Code.</p> <p>2. Submit final HVAC systems design to ERO or the ERO’s designee for review and approval.</p> |

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Implementation Responsibility | Monitoring and Reporting Program |                                     |                                        |
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| <p>interior noise limits of 55 dBA and 45 dBA for daytime and nighttime hours inside any sleeping or living room in a nearby dwelling unit on a residential property assuming windows open, respectively). The analysis shall be prepared by persons qualified in acoustical analysis and/or engineering. All recommendations from the acoustical analysis necessary to ensure that noise sources would meet applicable requirements of the noise ordinance and/or not result in substantial increases in ambient noise levels shall be incorporated into the building design and operations. Acoustical treatments required to meet the noise limits in the San Francisco Police code may include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Enclosing noise-generating mechanical equipment;</li> <li>• Installing relatively quiet models of air handlers, exhaust fans, and other mechanical equipment;</li> <li>• Using mufflers or silencers on equipment exhaust fans;</li> <li>• Orienting or shielding equipment to protect noise sensitive receptors (residences, hospitals, convalescent homes, schools, churches, hotels and motels, and sensitive wildlife habitat) to the greatest extent feasible;</li> <li>• Increasing the distance between noise-generating equipment and noise-sensitive receptors; and/or</li> <li>• Placing barriers around the equipment to reduce noise.</li> </ul> |                               |                                  |                                     |                                        |

**Mitigation Measure M-NO-2: Vibration Reduction during Construction**

Prior to the start of construction for each phase of the project, the SFPUC shall complete a screening-level analysis comparing vibration levels for various pieces of equipment with the distance to adjacent buildings or structures. If the minimum equipment setback distances for the use of vibratory equipment in the table below can be met and groundborne vibration would not result in building damage or sleep disturbance, then a Vibration Management and Monitoring Plan does not need to be prepared, and the remainder of this measure is not applicable. The screening-level analysis shall be submitted to the ERO or the ERO's designee for approval. The construction contract specifications shall require contractors to avoid use of vibratory equipment within the following setback distances from buildings as well as during any nighttime trenchless construction within 80 feet of residential structures.

However, if vibratory equipment must be used within the vibration minimum setback distances or nighttime work must occur within the vibration setback distances noted below, then a Vibration Management and Monitoring Plan shall be required as described below.

**Vibration Minimum Setback Distances –**

| Equipment                                                               | Reference PPV at 25 feet | Minimum Setback Distance to Historic Buildings - 0.25 in/sec PPV (continuous) | Minimum Setback Distance to Older Buildings (typ.) - 0.3 in/sec PPV (continuous) |
|-------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Vibratory Pile Driver                                                   | 0.170                    | 18 feet                                                                       | 15 feet                                                                          |
| Vibratory Roller (highway class size)                                   | 0.210                    | 22 feet                                                                       | 19 feet                                                                          |
| Vibratory Roller (12-ton)                                               | 0.067                    | 8 feet                                                                        | 7 feet                                                                           |
| Hoe Ram                                                                 | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |
| Large Bulldozer /Excavator/Loader/Bac khoe (>20,000lb Operating Weight) | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |
| Drill Rig                                                               | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |

1. SFPUC EMB
2. SFPUC CM Team (qualified acoustical/vibration engineer or consultant)
3. SFPUC CM Team (qualified acoustical/vibration engineer or consultant with historic preservation professional if needed)
4. SFPUC CM Team (qualified acoustical/vibration engineer with historic preservation professional if needed)
5. SFPUC CM Team (qualified acoustical/vibration engineer with historic preservation)

1. Design
2. Construction
3. Construction
4. Construction
5. Construction, after damage

1. SFPUC EMG
2. SFPUC EMG, ERO
3. SFPUC EMG, ERO
4. SFPUC EMG, ERO
5. SFPUC EMG, ERO

1. Ensure contract documents include requirements for preparation and implementation of vibration management and monitoring plan.
2. Submit vibration management and monitoring plan to ERO or ERO's designee for review and approval.
3. If triggered, conduct preconstruction survey prior to use of vibration generating construction equipment and submit to ERO or ERO's designee for review and approval .
4. Monitor to ensure that contractor implements plan, report noncompliance, ensure corrective action.
5. In the event of damage, notify ERO, submit a report documenting damage, and determine and implement appropriate treatment,

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Implementation Responsibility                                                                                                            | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria                                                                                                                                                                                                                                                                                     |
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| <p><u>Vibration Management and Monitoring Plan</u> – Prior to construction, the SFPUC shall submit a project-specific Vibration Management and Monitoring Plan to the ERO or the ERO’s designee for approval if required per above. The plan shall identify all feasible means to avoid damage to potentially affected buildings. The Vibration Management and Monitoring Plan shall be prepared by a qualified vibration engineer, with input from the construction contractor, and the contract specifications shall include the requirement for this plan, as necessary, along with the measures below. The Vibration Management and Monitoring Plan shall include, at a minimum, the following components, as applicable:</p> <ul style="list-style-type: none"> <li> <b>Pre-construction Survey.</b> Prior to the start of any ground-disturbing activity, the SFPUC or its contractor shall engage a consultant to undertake a pre-construction survey of potentially affected buildings where vibratory equipment must be used at and within the vibration minimum setback distances and shall document existing damage, such as cracks and loose or damaged features (as allowed by property owners. The survey shall be done by a qualified professional (e.g. a licensed engineer or acoustical consultant) who shall document and photograph the existing conditions of the potentially affected buildings and/or structures. The SFPUC shall submit the survey to the ERO or the officer’s designee for review and approval prior to the start of vibration-generating construction activity.           </li> </ul> <p>If nearby affected buildings are potentially historic, the survey shall additionally include descriptions and photograph of all identified historic buildings (such as the existing Central Pump Station) prepared by a qualified historic preservation professional including all facades, roofs, and details of the character-defining features that could be damaged during construction, and shall document existing damage, such as cracks and loose or damaged features (as allowed by property owners). The report shall also include pre-construction drawings that record the pre-construction condition of the buildings and identify cracks and other features to be monitored during construction. The qualified historic preservation professional shall be the lead author of the pre-construction survey if historic buildings and/or structures could be affected by the project. The SFPUC shall</p> | <p>professional if needed)</p> <p>6. SFPUC CM Team (qualified acoustical/ vibration engineer with historic preservation professional</p> | 6. Construction                  | 6. SFPUC EMG, ERO                   | <p>including consultation with the planning department’s preservation staff if the affected building is a historic resource.</p> <p>6. Prepare and submit Vibration Monitoring Results Report to ERO or ERO’s designee, including discussion of any damage and actions taken to repair damage, for review and approval.</p> |

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Implementation Responsibility | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria |
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| submit the survey for review and approval prior to the start of vibration-generating construction activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                               |                                  |                                     |                                         |
| <ul style="list-style-type: none"> <li> <b>Maximum Vibration Level.</b> Based on the anticipated construction and condition of the affected buildings and/or structures on adjacent properties, a qualified acoustical/vibration consultant in coordination with a structural engineer (or professional with similar qualifications) and, in the case of potentially affected historic buildings/structures, a qualified historic preservation professional, shall establish a maximum vibration level that shall not be exceeded at each building/structure on adjacent properties, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (common standards are a peak particle velocity [PPV] of 0.25 inch per second for historic and some old buildings, a PPV of 0.3 inch per second for older residential structures, and a PPV of 0.5 inch per second for new residential structures and modern industrial/commercial buildings). </li> <li> <b>Vibration-generating Equipment.</b> The plan shall identify all vibration-generating equipment to be used during construction at applicable locations and identify potential alternative equipment and techniques that could be implemented if construction vibration levels are observed to meet or exceed the established criterion based on soil conditions. Such methods may include one or more of the following: <ul style="list-style-type: none"> <li>Use a smaller 12-ton or 8-ton roller, a vibratory roller with reduced vibration amplitude settings, or hand-held “jumping jack” compactor</li> <li>Incorporate non vibratory shoring methods and/or “quiet” pile-driving technologies into project construction (such as pre-drilled shafts drilled shafts, hydraulic pile driving methods, sonic pile drivers, auger cast-in-place, variable speed vibratory, micro-piling, or drilled-displacement), as feasible; and/or as needed to meet established criteria.</li> <li>Ensure appropriate excavation shoring methods to prevent the movement of adjacent structures.</li> </ul> </li> <li> <b>Alternative Construction Equipment and Techniques.</b> The plan shall identify potential alternative equipment and techniques that </li> </ul> |                               |                                  |                                     |                                         |



| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Implementation Responsibility | Monitoring and Reporting Program |                                     |                                        |
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| <p>could be implemented if construction vibration levels are observed in excess of the established standard (e.g., drilled shafts [caissons] could be substituted for driven piles, if feasible, based on soil conditions, or smaller, lighter equipment could be used in some cases).</p> <ul style="list-style-type: none"> <li> <b>Pile Driving Requirements.</b> If pile driving is deemed necessary, the SFPUC shall incorporate into construction specifications for the project a requirement that the construction contractor(s) use all feasible means to avoid or reduce damage to potentially affected buildings). Such methods may include one or more of the following: <ul style="list-style-type: none"> <li>Incorporate non vibratory shoring methods and/or “quiet” pile-driving technologies into project construction (such as pre-drilled shafts drilled shafts, hydraulic pile driving methods, sonic pile drivers, auger cast-in-place, variable speed vibratory, micro-piling, or drilled displacement), as feasible; and/or as needed to meet established criteria.</li> <li>Ensure appropriate excavation shoring methods to prevent the movement of adjacent structures.</li> </ul> </li> <li> <b>Vibration Monitoring.</b> The plan shall identify the method and equipment for vibration monitoring to ensure that construction vibration levels do not exceed the established standards identified in the plan. <ul style="list-style-type: none"> <li>Should construction vibration levels be observed to meet or exceed the criteria established in the plan, the contractor(s) shall halt the vibration-generating construction activity causing the exceedance and put alternative construction techniques identified in the plan into practice.</li> <li>If vibration has damaged nearby buildings and/or structures that are not historic, a qualified professional shall prepare a damage report documenting the features of the building and/or structure that has been damaged.</li> <li>If vibration has damaged nearby buildings and/or structures that are historic, the historic preservation consultant shall immediately notify the ERO and prepare a damage report documenting the features of the building and/or structure that has been damaged.</li> </ul> </li> </ul> |                               |                                  |                                     |                                        |

[illegible]

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Implementation Responsibility               | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria                                                                                                                                     |
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| <p><b>Paleontological Resource Discoveries.</b> In the event of the discovery of an unanticipated paleontological resource during project construction, ground-disturbing activities shall temporarily be halted within 25 feet of the find until the discovery is examined by a qualified paleontologist as recommended by the Society of Vertebrate Paleontology standards (Society of Vertebrate Paleontology 2010) and best practices in mitigation paleontology (Murphey et al. 2019). The paleontologist shall consult the ERO. Work within the sensitive area shall resume only when deemed appropriate by the qualified paleontologist in consultation with the ERO.</p> <p>The qualified paleontologist shall determine 1) if the discovery is scientifically significant; 2) the necessity for involving other responsible or resource agencies and stakeholders, if required or determined applicable; and 3) methods for resource recovery. If a paleontological resource assessment results in a determination that the resource is not scientifically important, this conclusion shall be documented in a paleontological evaluation letter to demonstrate compliance with applicable statutory requirements (e.g., Federal Antiquities Act of 1906, CEQA Guidelines section 15064.5, Public Resources Code Chapter 17, section 5097.5, Paleontological Resources Preservation Act 2009). The paleontological evaluation letter shall be submitted to the ERO for review within 30 calendar days of the discovery.</p> <p>If in consultation with the ERO the qualified paleontologist determines that a paleontological resource is of scientific importance, the qualified paleontologist shall make a recommendation as to what action, if any, is warranted and prepare a paleontological mitigation program. The mitigation program shall include measures to fully document the resource of scientific importance. It shall include: 1) procedures for construction monitoring at the project site; 2) fossil preparation and identification procedures; 3) curation of paleontological resources of scientific importance into an appropriate repository; and 4) preparation of a Paleontological Resources Report (report or paleontology report) at the conclusion of ground-disturbing activities. The qualified paleontologist shall submit the mitigation program to the ERO for review and approval within ten business days of the discovery.</p> <p>To avoid construction delays, fully exposed fossils will be immediately removed by the paleontologist to the extent feasible. Consistent with the</p> | 4. SFPUC CM Team (qualified paleontologist) | 4. Construction                  | 4. SFPUC EMG, ERO                   | suspends activities within 25 feet are temporarily halted, notify the ERO, and mobilize a qualified paleontologist.                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5. SFPUC CM Team (qualified paleontologist) | 5. Construction                  | 5. SFPUC EMG, ERO                   | 4. Qualified paleontologist to evaluate the find and advise ERO as to the significance of the discovery. If not significant, work may resume once approved by the ERO.      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6. SFPUC CM Team (qualified paleontologist) | 6. Construction                  | 6. SFPUC EMG                        | 5. If the discovery is significant, Prepare and submit Paleontological Mitigation Program Plan to the ERO within 10 business days of the discovery for review and approval. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7. SFPUC CM Team (qualified paleontologist) | 7. Construction                  | 7. SFPUC EMG, ERO                   | 6. Monitor implementation of Paleontological Mitigation Program.                                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |                                  |                                     | 7. Prepare and submit a Paleontological Mitigation Results Report to the ERO within 30 business of the conclusion of ground-disturbing activities, or as                    |

| Adopted Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Implementation Responsibility | Monitoring and Reporting Program |                                     | Monitoring Actions/ Completion Criteria          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------|-------------------------------------|--------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                               | Mitigation Schedule              | Monitoring/Reporting Responsibility |                                                  |
| <p>Society of Vertebrate Paleontology 2010 guidelines, samples of the soil matrix where the discovery occurred may need to be removed from the project site and processed elsewhere. Mitigation required by this measure could suspend construction within an appropriate buffer zone around a discovered paleontological resource or area for up to a maximum of four weeks. At the direction of the ERO and in coordination with the SFPUC, the suspension of construction may be extended beyond four weeks for a reasonable time required to implement appropriate mitigation only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological to a less-than-significant level.</p> <p>Upon approval by the ERO, ground-disturbing activities in the project area shall resume and be monitored as determined by the qualified paleontologist for the duration of such activities.</p> <p>The paleontology report shall include dates of field work, results of monitoring, fossil identifications to the lowest possible taxonomic level, analysis of the fossil collection, a discussion of the scientific significance of the fossil collection, conclusions, locality forms, an itemized list of specimens, and a repository receipt from the curation facility. The SFPUC shall be responsible for the preparation and implementation of the mitigation program, in addition to any costs necessary to prepare and identify collected fossils, and for any curation fees charged by the paleontological repository. The paleontology report shall be submitted to the ERO for review within 30 business days from conclusion of ground-disturbing activities, or as negotiated following consultation with the ERO.</p> |                               |                                  |                                     | negotiated with the ERO for review and approval. |

NOTES:

<sup>a</sup> Definitions of MMRP Column Headings:

*Adopted Mitigation and Improvements Measures:* Full text of the mitigation measure(s) copied verbatim from the final CEQA document.

*Implementation Responsibility:* Entity who is responsible for implementing the mitigation measure. In most cases this is the SFPUC and/or project's sponsor's contractor/consultant and at times under the direction of the planning department.

*Mitigation Schedule:* Identifies milestones for when the actions in the mitigation measure need to be implemented.

*Monitoring/Reporting Responsibility:* Identifies who is responsible for monitoring compliance with the mitigation measure and any reporting responsibilities. In most cases it is the planning department who is responsible for monitoring compliance with the mitigation measure. If a department or agency other than the planning department is identified as responsible for monitoring, there should be an expressed agreement between the planning department and that other department/agency. In most cases the SFPUC, their contractor, or consultant are responsible for any reporting requirements.

*Monitoring Actions/Completion Criteria:* Identifies the milestone at which the mitigation measure is considered complete. This may also identify requirements for verifying compliance.

Acronyms Used in Table:

ERO = SF Planning Department) Environmental Review Officer

SFPUC = San Francisco Public Utilities Commission

SFPUC EMB = Engineering Management Bureau

SFPUC CM Team = Construction Management Team

SFPUC EMG = Environmental Management Group

SFPUC PMB = Project Management Bureau

MM = Mitigation Measure

TCRPIP = Tribal Cultural Resources Interpretive Program

ARDP = Archeological Data Recovery Plan

ARR = Archeological Resources Report

TCRPP = Tribal Cultural Resources Preservation Plan

CRPIP = Cultural Resources Public Interpretation Plan

NAHC = Native American Heritage Commission

AMTRR = Archeological Monitoring or Testing Result Report

ARPP = Archeological Resource Preservation Plan

MLD = Most Likely Descendant

NWIC = Northwest Information Center

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# **APPENDIX B**

## **SFPUC STANDARD CONSTRUCTION MEASURES**



## MEMORANDUM

**TO:** Michael Carlin, Juliet Ellis, Barbara Hale,  
Kathryn How, Tommy Moala, Steven Ritchie,  
Eric Sandler

**DATE:** July 1, 2015

**FROM:** Harlan L. Kelly, Jr.   
General Manager

**SUBJECT:** SFPUC Standard  
Construction  
Measures

In 2006, the SFPUC General Manager (GM) directed SFPUC staff to incorporate the Standard Construction Measures (Measures) in all SFPUC projects via memorandum on August 16, 2006. The directive was updated and clarified on December 6, 2006. The GM updated and re-issued the Measures on February 7, 2007. The purpose then, as it is now, was for the SFPUC to adopt environmentally responsible practices to apply to all SFPUC projects.

This directive further updates the Measures. In particular, the protocol for cultural resources is included in detail in order to fully incorporate the San Francisco Planning Department's recently adopted approach to this resource area so that all SFPUC are constructed consistently with this protocol. The updated cultural resources protocols are set forth in full and are attached to this memorandum.

In addition to complying with all applicable local, State, and federal laws and regulations, these Measures are to be followed as a standard practice in the execution of every SFPUC project. While some of the Measures may not apply to a project, it is important to address each of the Measures either by implementing the Measure as described, explaining why it is not applicable to the particular project, or undertaking further investigation and developing a more detailed work plan to address the resource as provided in the resource-specific Measures. Some of the Measures are very broad and will be tailored to suit each project site and surrounding circumstances.

For projects that undergo full CEQA review (Mitigated Negative Declarations or Environmental Impact Reports) and/or receive resource agency permits (e.g., US Army Corps of Engineers, California Department of Fish and Wildlife, etc.), these Measures may be superseded and/or amplified with more detailed, project specific

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Mayor

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President

Francesca Vietor  
Vice President

Vince Courtney  
Commissioner

Anson Moran  
Commissioner

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Commissioner

Harlan L. Kelly, Jr.  
General Manager



mitigation measures or conditions stipulated in the project CEQA document and/or permits.

The Measures can be accessed at the following link:

[S:\SFPUC Standard Construction Measures](#)

The responsibility for implementation of the Standard Construction Measures rests with each Project Manager in Infrastructure and the SFPUC Enterprises. If you have any questions please contact Irina Torrey, Manager, Bureau of Environmental Management at 415-554-3232.

Please begin implementing these Measures immediately. Thank you for your cooperation.



## **SFPUC Standard Construction Measures**

**1. SEISMIC AND GEOTECHNICAL STUDIES:** All projects will prepare a characterization of the soil types and potential for liquefaction, subsidence, landslide, fault displacement, and other geological hazards at the project site and will be engineered and designed as necessary to minimize risks to safety and reliability due to such hazards. As necessary, geotechnical investigations will be performed.

**2. AIR QUALITY:** All projects within San Francisco City (the City) limits will comply with the Construction Dust Control Ordinance. All projects outside the City will comply with applicable local and State dust control regulations. All projects within City limits will comply with the Clean Construction Ordinance. Projects outside City limits will comply with San Francisco or other applicable thresholds for health risks. All projects, both within and outside of City limits, will comply with either San Francisco or other applicable thresholds for construction criteria air pollutants.

To meet air quality thresholds, all projects (as necessary) will implement air quality controls to be tailored to the project, such as using high tier engines, Verified Diesel Emissions Control Strategies (VDECS) such as diesel particulate filters, customized construction schedules and procedures, and low emissions fuel.

**3. WATER QUALITY:** All projects will implement erosion and sedimentation controls to be tailored to the project site such as, fiber rolls and/or gravel bags around stormdrain inlets, installation of silt fences, and other such measures sufficient to prevent discharges of sediment and other pollutants to storm drains and all surface waterways, such as San Francisco Bay, the Pacific Ocean, water supply reservoirs, wetlands, swales, and streams. As required based on project location and size, a Stormwater Control Plan (in most areas of San Francisco) or a Stormwater Pollution Prevention Plan (SWPPP) (outside of San Francisco and in certain areas of San Francisco) will be prepared. If uncontaminated groundwater is encountered during excavation activities, it will be discharged in compliance with applicable water quality standards and discharge permit requirements.

**4. TRAFFIC:** All projects will implement traffic control measures sufficient to maintain traffic and pedestrian circulation on streets affected by construction of the project. Traffic control measures may include, but not be limited to, flaggers and/or construction warning signage of work ahead; scheduling truck trips during non-peak hours to the extent feasible; maintaining access to driveways, private roads, and off-street commercial loading facilities by using steel trench plates or other such method; and coordination with local emergency responders to maintain emergency access. For projects in San Francisco, the measures will also, at a minimum, be consistent with the requirements of San Francisco Municipal Transportation Agency (SFMTA)'s Blue Book. Any temporary rerouting of transit vehicles or relocation of transit facilities would be coordinated with the applicable transit agency, such as SFMTA Muni Operations in San Francisco. All Projects will obtain encroachment permits from the applicable jurisdiction for work in public roadways.

**5. NOISE:** All projects will comply with local noise ordinances regulating construction noise. The SFPUC shall undertake measures to minimize noise disruption to nearby neighbors and sensitive receptors during construction. These efforts could include using best available noise control technologies on equipment (i.e., mufflers, ducts, and acoustically attenuating shields),



locating stationary noise sources (i.e., pumps and generators) away from sensitive receptors, erecting temporary noise barriers, and other such measures.

**6. HAZARDOUS MATERIALS:** Where there is reason to believe that site soil or groundwater that will be disturbed may contain hazardous materials, the SFPUC shall undertake an assessment of the site in accordance with any applicable local requirements (e.g., Maher Ordinance) or using reasonable commercial standards (e.g., Phase I and Phase II assessments, as needed). If hazardous materials will be disturbed, the SFPUC shall prepare a plan and implement the plan for treating, containing or removing the hazardous materials in accordance with any applicable local, State and federal regulations so as to avoid any adverse exposure to the material during and after construction. In addition, any unidentified hazardous materials encountered during construction likewise will be characterized and appropriately treated, contained or removed to avoid any adverse exposure. Measures will also be implemented to prevent the release of hazardous materials used during construction, such as storing them pursuant to manufacturer recommendation, maintaining spill kits onsite, and containing any spills that occur to the extent safe and feasible followed by collection and disposal in accordance with applicable laws. SFPUC will report spills of reportable quantity to applicable agencies (e.g., the Governor's Office of Emergency Services).

**7. BIOLOGICAL RESOURCES:** All project sites and the immediately surrounding area will be screened to determine whether biological resources may be affected by construction. A qualified biologist will also carry out a survey of the project site, as appropriate, to note the general resources and identify whether habitat for special-status species and/or migratory birds, are present. In the event further investigation is necessary, the SFPUC will comply with all local, State, and federal requirements for surveys, analysis, and protection of biological resources (e.g., Migratory Bird Treaty Act, federal and State Endangered Species Acts, etc.). If necessary, measures will be implemented to protect biological resources, such as installing wildlife exclusion fencing, establishing work buffer zones, installing bird deterrents, monitoring by a qualified biologist, and other such measures. If tree removal is required, the SFPUC would comply with any applicable tree protection ordinance.

**8. VISUAL AND AESTHETIC CONSIDERATIONS, PROJECT SITE:** All project sites will be maintained in a clean and orderly state. Construction staging areas will be sited away from public view where possible. Nighttime lighting will be directed away from residential areas and have shields to prevent light spillover effects. Upon project completion, project sites on SFPUC-owned lands will be returned to their general pre-project condition, including re-grading of the site and re-vegetation or re-paving of disturbed areas to the extent this is consistent with SFPUC's Integrated Vegetation Management Policy. However, where encroachment has occurred on SFPUC-owned lands, the encroaching features may not be restored if inconsistent with the SFPUC policies applicable to management of its property. Project sites on non-SFPUC land will be restored to their general pre-project condition so that the owner may return them to their prior use, unless otherwise arranged with the property owner.

**9. CULTURAL RESOURCES:** All projects that will alter a building or structure, produce vibrations, or include soil disturbance will be screened to assess whether cultural resources are or may be present and could be affected, as detailed below.

**Archeological Resources.** No archeological review is required for a project that will not entail ground disturbance. Projects involving ground disturbance will undergo screening for



archeological sensitivity as described below and implement, as applicable, SFPUC's Standard Archeological Measures I (Discovery), II (Monitoring) and III (Testing/Data Recovery) per the Cultural Resources Attachments. Standard Construction Measure I will be implemented on all projects involving ground disturbance and Standard Archeological Measures II and III will be implemented based on the screening process described below for projects assessed as having the potential to encounter archeological sites and/or if an archeological discovery occurs during construction.

Projects involving ground disturbance will initially be screened to identify whether there is demonstrable evidence of prior ground disturbance in the project site to the maximum vertical and horizontal extent of the current project's planned disturbance. For projects where prior complete ground disturbance has occurred throughout areas of planned work, SFPUC will provide evidence of the previous disturbance in the Categorical Exemption application and no further archeological screening will be required.

For projects that are on previously undisturbed sites or where the depth/extent of prior ground disturbance cannot be documented, or where the planned project-related ground disturbance will extend beyond the depth/extent of prior ground disturbance, additional screening will be carried out as detailed below and shown on the attached flow chart titled "SFPUC Standard Construction Measure #9 Archeological Assessment Process". The additional screening will be conducted by the SFPUC's qualified archeologist (defined as meeting the Secretary of the Interior's Professional Qualifications Standards [36 CFR 61]) and, if a consultant, selected in consultation with the San Francisco Planning Department's Environmental Review Officer (ERO) and meeting criteria or specialization required for the resource type as identified by the ERO.

- 1) The SFPUC qualified archeologist will conduct an archival review for the project site, including review of Environmental Planning's (EP's) archeological GIS data and/or a records search of the California Historical Resources Information System (CHRIS) and other archival sources as appropriate. The qualified archeologist will also conduct an archeological field survey of the project site if, in the archeologist's judgment, this is warranted by site conditions. Based on the results, the archeologist will complete and submit to EP a Preliminary Archeological Checklist (PAC) (version dated 4/2015, to be amended in consultation with the ERO as needed). The PAC will include recommendations for the need for archeological testing, additional research and/or treatment measures consistent with Archeological Measures I, II, and III, to be implemented by the project to protect and/or treat significant archeological resources identified as being present within the site and potentially affected by the project.
- 2) The EP Archeologist (for projects within the City) or the ERO's archeological designee (for projects outside the City) will then conduct a Preliminary Archeological Review (PAR) of the PAC and other sources as warranted; concur with the PAC recommendations; and/or amend the PAC in consultation with the SFPUC archeologist or archeological consultant to require additional research, reports, or treatment measures as warranted based on his/her professional opinion.
- 3) The SFPUC shall implement the PAC/PAR recommendations prior to and/or during project construction consistent with Standard Archeological Measures I, II, and III, and



shall consult with the EP Archeologist in selecting an archeological consultant, as needed, to implement these measures.

- 4) Ground disturbing activities in archeologically sensitive areas, as identified through the above screening, will not begin until required preconstruction archeological measures of the PAC/PAR (e.g., preparation of an Archeological Monitoring Plan, Archeological Treatment Plan, and/or an Archeological Research Design and Data Recovery Plan) have been implemented.

**Historic (Built Environment) Resources.** For projects within the City that include activities with the potential for direct or indirect effects to historic buildings or structures, initial CEQA screening will include a review, for the project footprint and up to one parcel surrounding the footprint of CCSF's online planning map, all relevant survey data, preservation address files, and other pertinent sources for previously-identified, historically significant buildings and building and structures more than 45 years old that have not been previously evaluated. For projects outside of the City, initial CEQA screening will include a records search of EP's CCSF historical resources data, CHRIS, and other pertinent sources for historically significant or potentially significant buildings and structures older than 45 years.

For projects that would modify an existing building or structure that has been determined by EP as being a significant historical resource (i.e., appears eligible to qualify for the CRHR), or that would introduce new aboveground facilities in the vicinity of a significant historical resource, or that would affect previously unevaluated buildings or structures more than 45 years old, the SFPUC will retain a qualified architectural historian (defined as meeting the Secretary of the Interior's Professional Qualification standards and, if a consultant, also selected in consultation with the ERO) to conduct a historical resource evaluation (HRE). SFPUC will submit the project description and the HRE to the CCSF Planning Department Preservation Planner or to the ERO's-designated qualified architectural historian to assess potential effects. Where the potential for the project to have adverse effects on historic buildings or structures is identified, the CCSF Planning Department Preservation Planner or the ERO's designee will consult with SFPUC to determine if the project can be conducted as planned or if the project design can be revised to avoid the significant impact, and will comply with applicable procedures set forth in Historic Architectural Resource Measure I. If these options are not feasible, the project will need to undergo further review with EP and mitigation may be required. If so, the project would not qualify for a Categorical Exemption from CEQA review.

Where construction will take place in proximity to a building or structure identified as a significant historical resource but would not otherwise directly affect it, the SFPUC will implement protective measures, such as but not limited to, the erection of temporary construction barriers to ensure that inadvertent impacts to such buildings or structures are avoided.

## **CULTURAL RESOURCES ATTACHMENTS**

Flow Chart: SFPUC Standard Construction Measure #9 Archeological Assessment Process

SFPUC Archeological Measure I (Archeological Discovery)

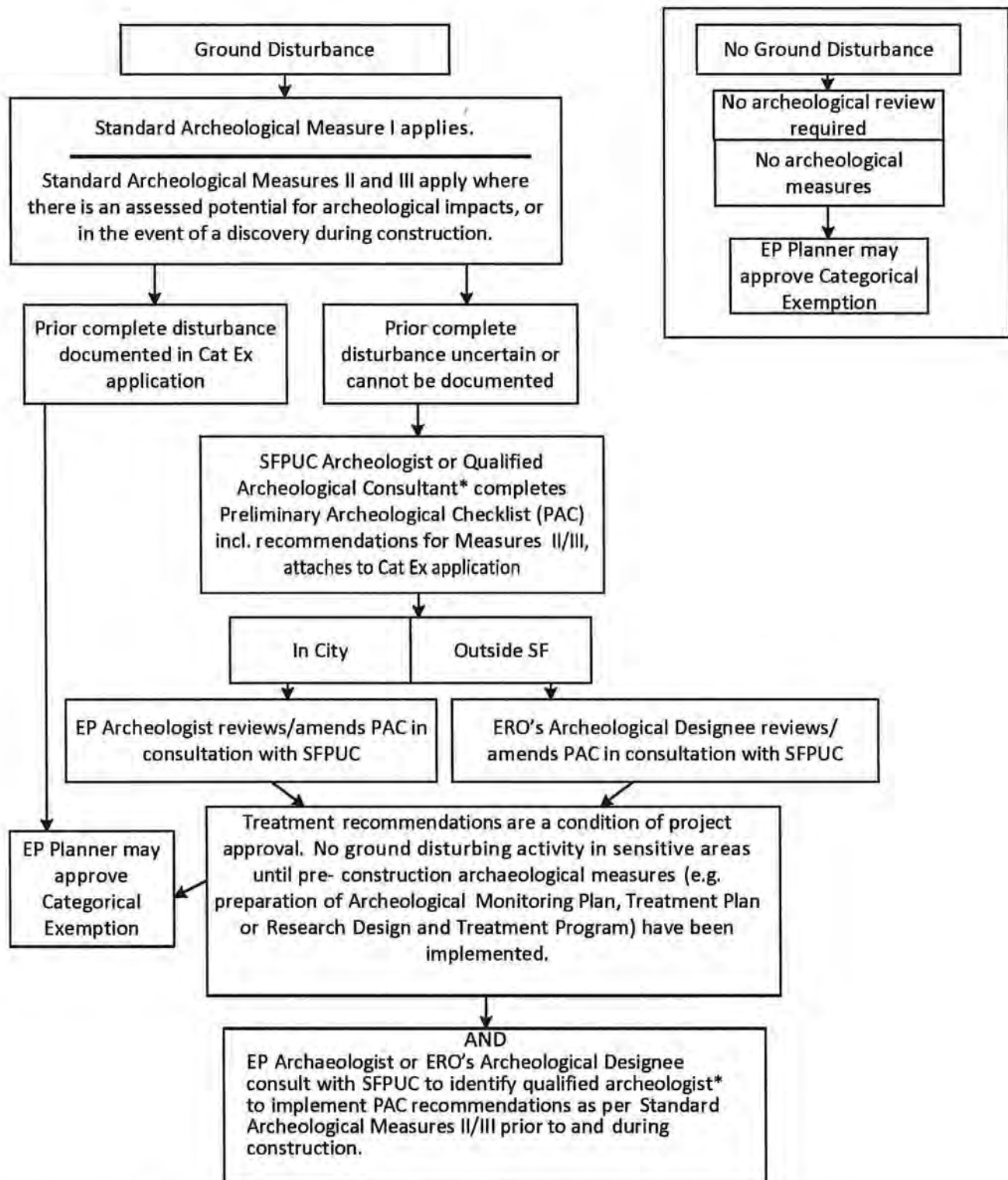
SFPUC Archeological Measure II (Archeological Monitoring)

SFPUC Archeological Measure III (Archeological Testing/Data Recovery)

Historic Architectural Resource Measure

SFPUC Preliminary Archeological Checklist (PAC)

# Flow Chart: SFPUC Standard Construction Measure #9 Archeological Assessment Process



\* Archeologist or archeological consultant who meets the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61) as defined in Standard Archeological Measure I.

SAN FRANCISCO  
**PLANNING DEPARTMENT**

5/28/2015. Subject to revision



## **SFPUC ARCHEOLOGICAL MEASURE I (Archeological Discovery)**

The following requirements are applicable to:

- All projects that will include soil (ground) disturbance, and
- Any discovery of a potential historical resource or of human remains, with or without an archeological monitor present.

### **Prior to ground disturbing activities:**

- A. **Alert Sheet.** The SFPUC shall, prior to any soils disturbing activities, distribute the Planning Department archeological resource "ALERT" sheet to each project contractor or vendor involved in project-related soils disturbing activities; ensure that each contractor circulates it to all field personnel; and provide the Environmental Review Officer (ERO) with a signed affidavit from each contractor confirming distribution to all field personnel.

### **Upon making a discovery:**

- B. **Work Suspension.** Should a potential archeological resource be encountered during project soils disturbing activity, with or without an archeological monitor present, the project Head Foreman shall immediately suspend soils disturbing activities within 50 feet (15 meters) of the discovery, protect the find from further disturbance, and notify the SFPUC Project Manager (PM) and/or Environmental Project Manager (EPM), who shall immediately notify the ERO for further consultation.
- C. **Qualified Archeologist.** All archeological work conducted under this measure shall be performed by an archeologist who meets the Secretary of the Interior's Professional Qualifications Standards (36-CFR 61); consultants will be selected in consultation with the ERO and meeting the criteria or specialization required for the resource type as identified by the ERO in a manner consistent with SFPUC's on-call contracting requirements.
- D. **Assessment and Additional Measures.** If the ERO determines that the discovery is a potential archeological/historical resource, the archeologist, in consultation with the ERO, shall document the find, evaluate based on available information whether it qualifies as a significant historical resource under the CEQA criteria, and provide recommendations for additional treatment as warranted. The ERO will consult with SFPUC and the qualified archeologist on these recommendations and may require implementation of additional measures as set forth below in Archeological Measures II and III, such as preparation and implementation of an Archeological Monitoring Plan, an Archeological Testing Plan, and/or an Archeological Data Recovery Plan, and including associated research designs, descendant group consultation, other reporting, curation, and public interpretation of results.
- E. **Report Reviews.** All plans and reports prepared by an archeological consultant, as specified herein, shall be submitted first and directly to the ERO for review and comment with a copy to the SFPUC and shall be considered draft reports subject to revision until final approval by the ERO.
- F. **Draft and Final Archeological Resources Reports.** For projects in which a significant archeological resource is encountered and treated during project implementation (see Archeological Measures II and III), the archeological consultant



shall submit a draft Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/monitoring/data recovery program(s) undertaken, research questions addressed, and research results. Information that may put at risk any archeological resource shall be provided in a separate, removable insert within the draft final report.

Once approved by the ERO, copies of the FARR shall be distributed as follows: two copies to the applicable California Historic Information System Information Center (CHRIS), one copy to each descendant group involved in the project, and documentation to the San Francisco Planning Department of transmittal of the above copies. In addition, the Planning Department shall be provided one bound, one unbound and one unlocked, searchable PDF copy on CD of the FARR, which shall include copies of any formal site recordation forms (CA DPR 523 series) and/or National Register of Historic Places/California Register of Historical Resources nominations.

- G. **Other Reports.** In instances of high public interest or interpretive value, the ERO may require different or additional final report content, format, and distribution than that presented above.
- H. **Human Remains, Associated or Unassociated Funerary Objects.** SFPUC shall ensure that human remains and associated or unassociated funerary objects discovered during any soils disturbing activity are treated in compliance with applicable State and federal laws. In the event of the discovery of potential human remains, the construction contractor shall ensure that construction activity within 50 feet of the find is halted and the SFPUC PM, EPM, ERO, and the County Coroner are notified immediately. If the Coroner determines that the remains are of Native American origin, he/she will notify the California State Native American Heritage Commission. Subsequent consultation on and treatment of the remains will be conducted consistent with Public Resources Code Section 5097.98 and CEQA Guidelines Section 15064.5(d), in consultation with the ERO.
- I. **Consultation with Descendant Communities.** Consistent with AB 52 requirements, if requested, the SFPUC shall provide opportunities for Native American descendant groups to provide input during project planning for projects that may affect potential Tribal Cultural Resources. In addition, on discovery during construction of an archeological site associated with descendant Native Americans, the Overseas Chinese, or other descendant group, an appropriate representative of the descendant group shall be contacted by SFPUC at the direction of the ERO. SFPUC will offer this representative the opportunity to monitor archeological field investigations of the site and to consult with the ERO regarding the appropriate treatment and, if applicable, interpretation of the site and the recovered materials.
- J. **Construction Delays.** Archeological monitoring and/or data recovery programs required by this measure may suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if this is the only feasible means to reduce potential effects on a significant archeological find to a less-than-significant level.



## **SFPUC ARCHEOLOGICAL MEASURE II (Archeological Monitoring)**

- A. **Archeological Monitoring Plan (AMP).** Where an archeological field investigation to identify expected buried or submerged resources cannot reasonably be carried out during project planning/ environmental review (for example, where definitive determination would require extensive street opening prior to construction), prior to any project-related soils-disturbing activities the qualified archeologist identified under Archeological Measure I.C. will consult with SFPUC and the ERO to develop an Archeological Monitoring Plan (AMP). The AMP which will be implemented in conjunction with soil-disturbing activities during construction. Preparation and implementation of an AMP also may be required based on the results of pre-construction archeological testing or upon a discovery during construction.

The AMP shall include the following elements, at minimum:

- Historical context and research design for assessment of resource types likely to be encountered;
- Project activities to be archeologically monitored and intensity of monitoring of each type and location of project construction activity; and
- Procedures for the documentation, significance and integrity assessment, treatment, interpretation and reporting of the types of resources likely to be encountered.

- B. **Reporting.** Whether or not significant archeological resources are encountered, the archeological consultant shall submit a written report of the findings of the monitoring program to the ERO at the end of construction (See Archeological Measure I.E [Report Reviews] and I.F. [Final Archeological Research Report]).

C. **Monitoring Authorities**

- The archeological monitor will have the authority to halt construction activity at the location of a suspected resource for inspection, documentation, and assessment of the need for further measures as set forth in Archeological Measure III.
- The Archeological Monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis.
- The Archeological Monitor(s) shall be present on the project site according to a schedule identified in the AMP, subject to modification upon ERO concurrence, based on findings.

- D. **Testing/Data Recovery.** In the event of a discovery during construction, if the ERO and archeological consultant determine that the discovery is a significant resource (that is, a resource that meets the eligibility criteria of the California Register of Historic Resources or qualifies as a unique archeological resource) that will be adversely affected (that is, where the project would result in loss of data potential) or that additional investigation is required to make this determination, all applicable elements of Archeological Measure III (Archeological Testing/Data Recovery) also will be implemented.



### **SFPUC ARCHEOLOGICAL MEASURE III (Testing / Data Recovery)**

The following provisions apply prior to or during construction when a significant archaeological resource (as defined in Measure II.D) or an archaeological resource of undetermined significance is expected to be present in the work area and the ERO, in consultation with the qualified archeologist, determines that an archeological field investigation is needed to determine: a) the presence of an archeological resource, b) whether it retains depositional integrity, and c) whether it qualifies as a legally significant resource under CEQA criteria. All archeological work under this Measure will be carried out by a qualified archeologist as identified in Archeological Measure I.C. Per Archeological Measure I.J, implementation of this measure shall not exceed four weeks except at the direction of the ERO and only if this is the only feasible means to reduce potential effects on a significant archeological find to a less-than-significant level.

**A. Archeological Testing Program.** If an archeological investigation is required in order to verify resource location and/ or assess the significance of the resource, the archeological consultant shall consult with the ERO to prepare and implement an Archeological Testing Plan (ATP) that identifies:

- Key research questions and associated data needs,
- Testing/ sampling methods, and
- Testing locations.

Results of testing shall be presented to ERO in a written report following Measure I.E. If, based on the archeological testing program, the archeological consultant finds and the ERO concurs that significant archeological resources may be present, Measures III.B and/or III.C below will be implemented.

**B. Treatment.** If the project could adversely affect a significant (CRHR-eligible) archeological resource, preservation in place is the preferred manner of mitigating impacts, as detailed in CEQA Guidelines 15126.6(b) (3)(a) and (b).

If preservation in place is determined to be infeasible, the SFPUC at its discretion shall either:

- Re-design the proposed project so as to reduce the adverse effect to a less- than-significant level through preservation in place or other feasible measures; and/or
- For a resource important for its association with an important event or person, or which is of demonstrable public interest for both its scientific and historical values (e.g., a submerged ship), and where feasible, preserve the resource in place with appropriate documentation; or, if not feasible to preserve in place, systematically document and/or recover for interpretive use, at the discretion of the ERO, and/or;

For an archeological resource significant primarily for its data potential, design and implement an archeological data recovery program, as detailed under Measure III.D, below.

**C. Archeological Data Recovery Plan (ADRP).** For resources for which the elected treatment is archeological data recovery, the archeological consultant, in consultation with the ERO, shall prepare and implement an ADRP. It will identify how the significant information the archeological resource is expected to contain will be recovered and



preserved. Data recovery results will be reported in the FARR, as detailed in Measure I.F. The ADRP shall include the following elements:

- Historic context and research design
- Field methods and procedures, including sampling strategy
- Archeological monitoring recommendations for ongoing construction
- Cataloguing and laboratory analysis
- Discard, deaccession, and curation policy
- Interpretive program
- Security measures

## **HISTORIC ARCHITECTURAL RESOURCE MEASURE**

- A. **Qualified Architectural Historian.** When a building or structure that has been determined to be an historical resource is identified within a project's area of potential effects, the SFPUC will retain a qualified architectural historian (defined as meeting the Secretary of the Interior's Professional Qualification standards and, if a consultant, selected in consultation with the ERO) to conduct a historical resource evaluation (HRE).
- B. **Effects Assessment.** The SFPUC will submit the project description and the HRE to CCSF Planning Department Preservation Planner or to the ERO's-designated qualified architectural historian to assess potential effects. If a potential for the project to have adverse effects on historic buildings or structures is identified, the CCSF Planning Department Preservation Planner or the ERO's architectural historian designee will consult with SFPUC to determine if the project can be implemented as planned or if the project design can be revised to avoid the significant impact. If these options are not feasible, the project will need to undergo further review with EP and mitigation may be required. If so, the project may not qualify for a Categorical Exemption from CEQA review.
- C. **Potential Vibration Effects.**
1. Where construction takes place in proximity to a building or structure identified as a significant historical resource but would not otherwise directly affect it, the SFPUC will implement protective measures, such as, but not limited to, the erection of temporary construction barriers to ensure that inadvertent impacts to such structures are avoided.
  2. For projects that will use vibratory equipment generating vibration in excess of 0.2 inches per second, peak particle velocity adjacent to historic buildings susceptible to vibration, the SFPUC will engage a qualified historic architect or historic preservation professional to document and photograph the pre-construction condition of the building and prepare a plan for monitoring the building during construction. The monitoring plan will be submitted to and approved by CCSF Planning Department Preservation Planner or the ERO's architectural historian designee prior to the beginning of construction and will be implemented during construction. The monitoring plan will identify how often monitoring will occur, who will undertake the monitoring, reporting requirements on vibration levels, reporting requirements on damage to adjacent historical resources during construction, reporting procedures to follow if such damage occurs, and the scope of the preconstruction survey and post-construction conditions assessment.

3. If any damage to a historic building or structure occurs, the SFPUC will modify activities to minimize further vibration.
4. If any damage occurs, the building will be repaired following the Secretary of the Interior's Standards for the Treatment of Historic Properties under the guidance of a qualified historic architect or historic preservation professional.

**D. Minor Alteration of Historic Buildings or Structures.**

1. If a project involves minor alterations and/or rehabilitation to a building that qualifies as an historical resource, the proposed design will be reviewed by a qualified historic preservation professional in consultation with the CCSF Planning Department Preservation Staff or the ERO's architectural historian, who shall identify modifications to project design, as needed, to avoid or minimize effects to the historic integrity of the historical resource. The assessment also will provide direction on ensuring compliance with Secretary of the Interior's Standards and Guidelines.
2. To qualify for a Categorical Exemption, the project must be modified as identified in the HRE and all work must be conducted in compliance with Secretary of the Interior's Standards under the guidance of an architectural historian such that historical integrity of the building or structure would not be compromised.





## SFPUC Preliminary Archeological Checklist

### 2. POTENTIAL GROUND DISTURBANCE (cont.)

| Yes                      | No                       | Project Component                                                                                       |
|--------------------------|--------------------------|---------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Pipeline replacement or installation (specify cut and cover, directional drilling, pipe bursting, etc): |
| <input type="checkbox"/> | <input type="checkbox"/> | Tunnels, transport storage boxes                                                                        |
| <input type="checkbox"/> | <input type="checkbox"/> | Bore pits, test pits                                                                                    |
| <input type="checkbox"/> | <input type="checkbox"/> | Shallow Building Foundation (Mat, Spread Footings, etc.)<br>Depth: _____                                |
| <input type="checkbox"/> | <input type="checkbox"/> | Piles, piers, micropiles, pilings, piling replacement                                                   |
| <input type="checkbox"/> | <input type="checkbox"/> | Grading, scraping                                                                                       |
| <input type="checkbox"/> | <input type="checkbox"/> | Demolition                                                                                              |
| <input type="checkbox"/> | <input type="checkbox"/> | Construction staging, spoils on unpaved area, fill                                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | Road construction                                                                                       |
| <input type="checkbox"/> | <input type="checkbox"/> | Geotechnical trenching (dimensions) _____                                                               |
| <input type="checkbox"/> | <input type="checkbox"/> | New rip rap                                                                                             |
| <input type="checkbox"/> | <input type="checkbox"/> | Wharf or seawall modification                                                                           |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify): _____                                                                                  |

**Anticipated maximum extent of project ground disturbance:**

Vertical \_\_\_\_\_ Horizontal \_\_\_\_\_

**APE Map Attached:**      Y      N

### 3. PREVIOUS SOILS DISTURBANCE AT PROJECT SITE:

**Has the project site been previously disturbed by any of the following?**

| Yes                      | No                       | Component of disturbance                                                        |
|--------------------------|--------------------------|---------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Existing Basement Depth: _____ Area: _____                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | Existing Foundation (footings, perimeter, piles, micropiles, etc.) Depth: _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | Site remediation/UST installation or removal, other excavation. Depth: _____    |
| <input type="checkbox"/> | <input type="checkbox"/> | Site Grading                                                                    |
| <input type="checkbox"/> | <input type="checkbox"/> | Demolition                                                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | Dredging                                                                        |
| <input type="checkbox"/> | <input type="checkbox"/> | Piling installation (width and depth of trench): _____                          |
| <input type="checkbox"/> | <input type="checkbox"/> | Riprap                                                                          |
| <input type="checkbox"/> | <input type="checkbox"/> | Seawall construction                                                            |
| <input type="checkbox"/> | <input type="checkbox"/> | Other (specify): _____                                                          |

**4. Has the entire project area previously been disturbed to the maximum depth and extent of proposed project disturbance?**      Y      N

*(Attach documentary evidence such as plans and profiles of prior trenching, utility street occupancy, historic photos, specifications from prior projects, etc.)*

List attachments provided: \_\_\_\_\_

☐ Complete prior disturbance adequately documented; stop here, no further archeological assessment is required. Assessed by: \_\_\_\_\_

☐ Prior ground disturbance is unknown or cannot be adequately documented; continue to B.



# SFPUC Preliminary Archeological Checklist

## B. ARCHIVAL AND ARCHEOLOGICAL DATA ASSESSMENT

### 1. ARCHIVAL AND DATA REVIEW

Dates of review: \_\_\_\_\_

Resources reviewed:

- ☐ Maher zone maps. Dates/ origin/ depth of fill if known \_\_\_\_\_
- ☐ Geotechnical data for project site and vicinity (Cite report \_\_\_\_\_)
- ☐ EP Archeological GIS maps (all layers or specify applicable layers) \_\_\_\_\_

- ☐ Sanborn Insurance maps (1887-93, 1899-1900)
- ☐ U.S. Coast Survey maps (1853, 1857, 1869)
- ☐ Information Center archeological records search (attach request and response)
- ☐ USFS/ BLM/ NPS archeological files (upcountry projects)
- ☐ NAHC Sacred Lands File
- ☐ Native American/ Ethnic group consultation
- ☐ Other: \_\_\_\_\_

#### Findings:

- ☐ No previously documented resources present
- ☐ Archival research suggests resources are or may be present within or immediately adjacent to the project area where soils disturbance will occur

### 2. ARCHEOLOGICAL FIELD INVENTORY

- ☐ Not warranted; no exposed ground surface in project area
- ☐ Results negative
- ☐ Results positive
- ☐ Survey results inconclusive

Archeologist/ Firm \_\_\_\_\_ Date of Survey \_\_\_\_\_

*Attach Archeological Survey Report/Memo; may combine with results of archival review.*

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### 3. SUMMARY OF RESULTS OF PROJECT ASSESSMENT

#### Site History/Formation:

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Recorded/documented archeological sites/ investigations on/in the vicinity of the project site:

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## C. SFPUC CONCLUSIONS AND RECOMMENDATIONS

### 1. NO EFFECTS TO ARCHEOLOGICAL RESOURCES EXPECTED:

- ☐ Project effects limited to previously-disturbed soils.
- ☐ Project effects limited to culturally sterile soils.
- ☐ Based on assessment under B, above, no potentially CEQA-significant archeological

## SFPUC Preliminary Archeological Checklist

resources are expected within project area affected soils.

### 2. AVOIDANCE AND TREATMENT MEASURES NECESSARY TO AVOID AN ADVERSE EFFECT TO SIGNIFICANT ARCHEOLOGICAL RESOURCES:

- ☐ Archeological Measure I, Discovery: low potential to adversely affect archeological resources; may be avoided by implementation of SFPUC Standard Archeological Measure I (Discovery during Construction), with implementation of Standard Archeological Measures II (Monitoring) and/or III (Testing/Data Recovery) in the event of a discovery during construction.
- ☐ Archeological Measure II, Monitoring: some potential for the project to adversely affect archeological resources; may be avoided by implementation of SFPUC Standard Archeological Measure II (Archeological Monitoring) during construction.
- ☐ Archeological Measure III, Testing/Data Recovery: potential for the project to adversely affect archeological resources; may be avoided by implementation of SFPUC Standard Archeological Measure III (Archeological Testing/Data Recovery)

Implementation Required:

☐ prior to or ☐ during construction

☐ CEQA evaluation of the project requires preparation and implementation of an archeological research design and treatment plan (ARDTP) by a qualified archeological consultant. See attached scope of work for the ARDTP.

### D. EP ARCHEOLOGIST/ ERO-ARCHEOLOGICAL DESIGNEE REVIEW

☐ I concur with the conclusions and recommendations provided in Section C, above.

☐ Additional/ alternative measures recommended (detail):

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☐ Meeting requested

# **APPENDIX C**

## **NOISE AND VIBRATION TECHNICAL ANALYSIS**

# **Noise and Vibration Results Memorandum for the Westside Potable Emergency Firefighting Water System Project**

**FINAL**

**OCTOBER 2025**

Prepared for:

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49 South Van Ness Avenue, Suite 1400  
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and

San Francisco Public Utilities Commission  
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Attachment A Two Loudest Noise Sources for Each Project Component

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## Acronyms and Abbreviations

|                        |                                                     |
|------------------------|-----------------------------------------------------|
| Caltrans               | California Department of Transportation             |
| dBA                    | A-weighted decibel(s)                               |
| FTA                    | Federal Transit Administration                      |
| in/s                   | inches per second                                   |
| $L_{eq}$               | equivalent noise level                              |
| methodology memorandum | Noise and Vibration Methodology Memorandum          |
| PPV                    | peak particle velocity                              |
| proposed project       | Potable Emergency Firefighting Water System project |
| VdB                    | vibration velocity level in decibel scale           |

## 1. Introduction

Vibro-Acoustic Consultants conducted an analysis of noise and vibratory levels associated with the proposed Westside Potable Emergency Firefighting Water System (PEFWS) project (proposed project). The Noise and Vibration Technical Memorandum is composed of the Technical Report Scope of Work, the Noise and Vibration Methodology Memorandum (methodology memorandum), and this Noise and Vibration Results Memorandum (results memorandum). The methodology memorandum describes the approach for evaluation of noise and vibration levels from construction and operational sources, the existing noise environment, and cumulative sources at modeled sensitive receptors (see preceding methodology memorandum). The results of the detailed calculations used to apply the analysis approach and data inputs described in the methodology memorandum are provided in this results memorandum.

Section 1.2, Project Understanding, of the methodology memorandum summarizes the project description for the proposed project.

The results memorandum addresses the following topics:

- **Section 1 – Introduction** presents the objectives of the report.
- **Section 2 – Existing Noise Environment** describes the ambient noise levels measured during the noise survey at predetermined locations disclosed in the methodology memorandum.
- **Section 3 – Project Noise and Vibration Analysis** describes the results from calculations and analyses performed.
- **Section 4 – Noise and Vibration Mitigation Measures** describes the noise and vibration reduction strategies required.
- **Section 5 – Conclusions** provides the findings from the calculations documented in the report.

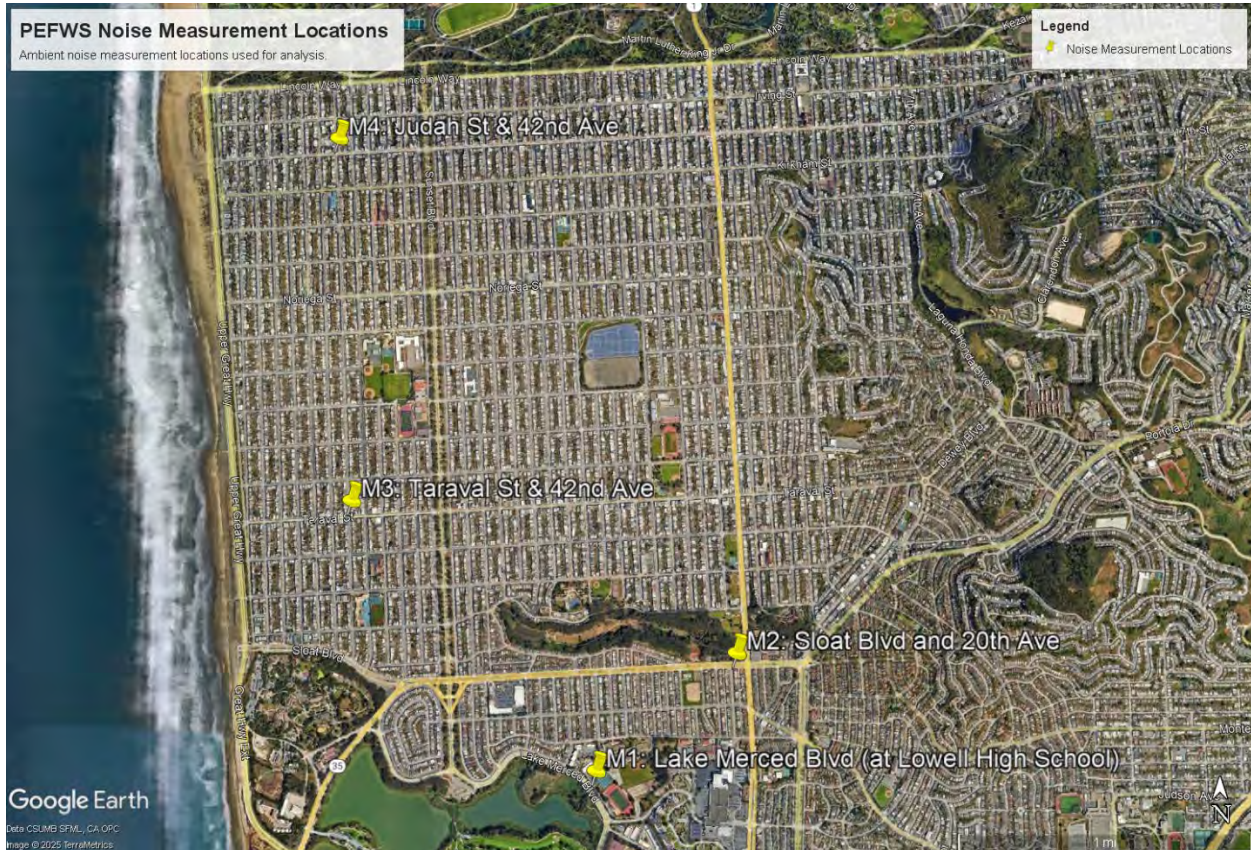
## 2. Existing Noise Environment

On December 4, 2024, Vibro-Acoustic Consultants conducted a site visit to establish existing noise levels for the proposed project and receiving land use property lines, and to support the characterization of the noise environment. In accordance with the methodology memorandum, ambient noise measurements were collected at four long-term (24-hour) locations along the proposed project alignment, shown in Figure 2-1 below. A field investigator set up long-term noise monitors at each location and conducted premeasurement instrument calibration checks before the start of monitoring. Long-term monitors were secured to existing fixed man-made or natural features and left unattended until revisited by the investigator to check instrument function. Measurements and analysis are based on 15-minute  $L_{eq}$  values.  $L_{eq}$  is the average sound level over a period of time (15-minutes in this case). The measurement locations were selected as a representative for the longest duration of construction close to sensitive receptors or where nighttime construction would occur. The rationale for individual receptors is summarized in Table 3 of the Methodology Memorandum.

The existing noise environment in the study area is dominated by noise from vehicular traffic and MUNI transportation (buses and trains) from adjacent roadways such as Lake Merced Blvd, Sloat Blvd (and 19<sup>th</sup> Ave, perpendicular to Sloat Blvd), Taraval St, and Judah St. A time-history plot of the sound pressure level (15-minute average equivalent noise level [ $L_{eq}$ ]) measured at the four locations over the 24-hour measurement period is shown in Figure 2-1.

The noise levels recorded at the sites (Figure 2-2) were moderately loud, with daytime 15-minute average  $L_{eq}$  levels ranging from 68 to 73 A-weighted decibels (dBA) at M1, 63 to 80 dBA at M2, 60 to 77 dBA at M3, and 55 to 71 dBA at M4. Table 2-1 summarizes the ambient daytime and nighttime noise levels at each location, which are used as the basis for noise calculations in the sections that follow.

**Figure 2-1 24-Hour Ambient Noise Measurement Locations (December 5, 2024)**



Source: Google Earth (2025)

**Figure 2-2 Time History of Measured Noise Levels (December 5, 2024)**

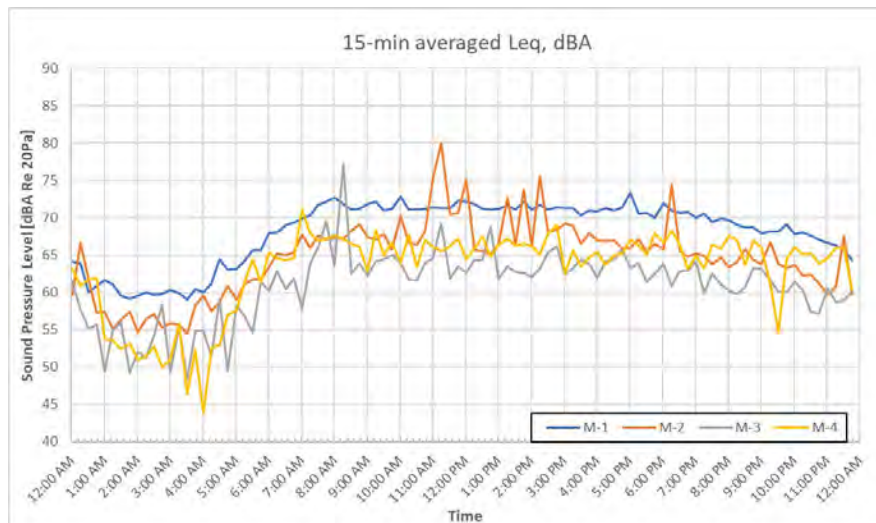


**Table 2-1 Ambient Noise Levels Determined at Each Measurement Location**

| Measurement Location | Address                                                      | Daytime, $L_{eq}$<br>(dBA) | Nighttime, $L_{eq}$<br>(dBA) | Day-Night<br>Average, $L_{dn}$<br>(dBA) |
|----------------------|--------------------------------------------------------------|----------------------------|------------------------------|-----------------------------------------|
| M1                   | Lake Merced Blvd –<br>between Middlefield Dr<br>& Winston Dr | 71                         | 65                           | 73                                      |
| M2                   | Sloat Blvd & 20 <sup>th</sup> Ave                            | 70                         | 61                           | 70                                      |
| M3                   | Taraval St & 42 <sup>nd</sup> Ave                            | 65                         | 58                           | 67                                      |
| M4                   | Judah St & 42 <sup>nd</sup> Ave                              | 66                         | 62                           | 69                                      |

Notes:

dBA = A-weighted decibels

Source: Vibro-Acoustic Consultants field measurements recorded in 2024

### 3. Project Noise and Vibration Analysis

Construction activities for the project generally entail pipeline construction via open trench and trenchless construction, construction of appurtenances including vaults, soil improvements, pipeline abandonment, improvements at an existing pump station, and construction of new pump stations. The analysis below evaluates the potential noise and vibration levels at representative closest sensitive receptors to specific construction activities. While multiple project components may be constructed at any given location, the analysis focuses on a single construction activity at each sensitive receptor to clearly identify the potential effects of construction noise of the project. Therefore, the analysis is representative of the noise and vibration impacts of the project that could occur throughout the project location. This analysis then identifies construction activities that may require noise reduction measures based on the construction activities and distances to noise and vibration sensitive receptors.

#### 3.1 Construction Noise – Daytime

Noise generated by project activities is assessed according to federal, state, and local noise regulations and guidance. Construction activities would predominantly occur during the daytime. These activities include the following: improvements at Lake Merced Pump Station; construction of two new pump stations; installation of project pipelines and other components including appurtenances via open trench; installation of pipelines via trenchless construction at certain locations; installation of other project components including vaults; and installation of soil improvements. Of these activities, some are qualitatively assessed for noise and do not warrant a quantitative analysis as described below because the construction would be limited in duration or would not substantially affect any noise sensitive receptors. The construction of improvements at Lake Merced Pump station occurs within the building. Further, the pipeline construction proceeds at a continual pace and does not expose a single receptor to noise for extended periods of time. The noise and vibration calculations performed at the chosen sensitive receptors are a representation of the predicted levels due to construction activities at all receptors along the project alignment, which are at similar distances from the corresponding equipment (source).

Other activities - including soil improvements, vaults, open trench pipeline installation with longer durations, and trenchless construction activities – have the potential to expose receptors R2, R4, R8, R9 and are analyzed quantitatively in the sections that follow.

Below is an overview of the construction activities for the different project components and locations.



## **Lake Merced Pump Station**

Construction of improvements at the Lake Merced Pump Station would primarily occur within the interior of the building and would not involve the use of heavy construction equipment. Because of this, the potential for elevated noise levels is minimal. In addition, the upgrades are anticipated to last approximately 6 months with no excavation needed. The nearby residences are located over 300 feet away, further reducing the likelihood of noticeable noise increases. The construction activities planned outside the building include installation of a new 42-inch pipeline between the existing pump house buildings. This pipeline will connect to existing pump outflow pipes and extend to Lake Merced Boulevard. Construction activities for open trench pipeline installation are discussed under Linear Pipeline Construction (Open Trench), below. Therefore, construction noise impacts associated with the Lake Merced Pump Station upgrades would be limited and are not anticipated to substantially affect nearby sensitive receptors and are not further analyzed quantitatively.

## **New Pump Stations 1 and 2: Central Pump Station/Merced Manor Reservoir Facility and Sunset Reservoir Facility**

Construction of the new emergency pump stations at the Central Pump Station/Merced Manor Reservoir facility (pump station 1) and Sunset Reservoir facility (pump station 2) would involve outdoor construction activities, including grading, trenching, and installation of utilities and equipment. The work at the pumps stations is expected to last for approximately 2 to 2.5 years. The demolition through foundations and shoring activities would last for 5 months for pump station 1 and 6.5 months for pump station 2. Building construction would take an additional 5 months for pump station 1 and 6.25 months for pump station 2, but only a portion of the building construction work would occur outside, with finish work for the pump stations taking place inside the buildings.

The loudest equipment anticipated during the construction of this project component includes a hoe ram and a concrete saw. The hoe ram, which is a high-powered demolition tool attached to an excavator, would be used to break up existing concrete driveways and equipment pads. Its use is expected to be limited to 1–2 days at each location, with no more than 4–6 hours of continuous operation per day. The concrete saw, used in small linear areas such as where the driveway meets the sidewalk or the existing pump slab, is expected to be used for approximately 2 hours in a single day. Collectively, the use of these pieces of equipment is not anticipated to exceed 14 days over a 90-day construction period.

Because of this limited duration and the localized nature of the work, construction noise impacts from the new pump stations are not anticipated to be substantial and do not warrant a detailed quantitative analysis. Furthermore, the noisiest phases of construction would be brief and occur early in the construction sequence, reducing the potential for prolonged exposure to elevated noise levels at nearby sensitive receptors.

## **Linear Pipeline Construction (Open-Trench)**

Pipeline installation would be completed primarily using open-trench construction. Open-trench work would proceed at a rate of approximately 20 to 30 feet per day, with construction activities at any single location typically lasting around two weeks, though not continuously. Trenching would be done using backhoes, excavators, loaders, and dump trucks. After trench excavation, structural fill bedding material would be placed, pipe sections would be lowered into the trench and welded together using welding machines and air fans, followed by backfilling and temporary or permanent paving using compactors, pavers, and vibratory rollers. Because the noise-generating equipment would move along

with the trenching activities, there would be no introduction of long-term stationary noise sources. As a result, noise levels at sensitive receptors along the alignment, are expected to exceed 90 dBA, however, these increases would be a limited duration of time and would not affect any sensitive receptors for any substantial period of time. Given the short duration of activity at each receptor, daytime open-trench construction is not expected to adversely affect sensitive receptors and is not analyzed further herein. The locations corresponding to longer durations of open-trench construction are, however, analyzed quantitatively. This is represented by the analysis for the sensitive receptor R4 (Sloat & 19th) where open-trench construction is anticipated to occur for approximately 2 months.

### 3.1.1 Daytime Construction Noise Analysis: 100 Feet from Equipment

Quantitative construction noise analysis and construction equipment noise levels are based on the Federal Transit Administration (FTA) guidance, which assumes that the loudest two pieces of equipment would be operating simultaneously during construction activities. The  $L_{eq}$  corresponding to each equipment at 50 feet is obtained from the FTA guidelines (Table 7-1); this was used to identify the loudest piece of construction equipment corresponding to each construction activity as listed in by calculating the noise level at 100 feet. As we understand it, the use of vibratory pile-driving during construction is possible but not confirmed at this time. For conservative analysis purposes usage of a vibratory pile-driver has been included in this report. The analysis below includes the results with vibratory pile driver where applicable. The following noise level is calculated based on the reference noise levels:

- Noise generated by the loudest source at 100 feet from the source for compliance with the San Francisco Noise Ordinance.

The resulting noise levels are compared against the corresponding criteria in Table 3-1 for compliance with the San Francisco Noise Ordinance. The noise levels in the table show that nearly all equipment employed on the project meet the noise limit of 80dBA at 100ft. The equipment that exceed the noise limit include the pile driver, concrete saw and hoe ram. Although pile drivers would exceed noise levels of 80 dBA, impact tools with approved mufflers are exempt from the 80 dBA limit and SFPUC would ensure that approved mufflers are used on all impact equipment. Additionally, the use of pile drivers on this project is tentative and is dependent on the soil conditions. Therefore, it is possible that pile drivers may not be employed.

**Table 3-1 Noise Level at 100 Feet Due to Construction Equipment (Daytime)**

| Construction Equipment | $L_{max}$ at 50ft, dBA<br>[FTA guidelines] | $L_{max}$ at 100ft, dBA<br>[Limit = 80 dBA] |
|------------------------|--------------------------------------------|---------------------------------------------|
| Flat Bed Truck         | 84                                         | 78                                          |
| truck                  | 76                                         | 70                                          |
| Concrete Pump Truck    | 82                                         | 76                                          |
| Dump Truck             | 76                                         | 70                                          |
| concrete saw           | 90                                         | <b>84</b>                                   |
| crane                  | 81                                         | 75                                          |
| excavator              | 81                                         | 75                                          |

|                                 |    |           |
|---------------------------------|----|-----------|
| Pile Driver (vibratory)         | 95 | <b>89</b> |
| Front end loader                | 80 | 74        |
| backhoe                         | 80 | 74        |
| Vacuum Street Sweeper           | 82 | 76        |
| paver                           | 85 | 79        |
| Pneumatic tools                 | 85 | 79        |
| Compactor (ground)              | 82 | 76        |
| Roller                          | 85 | 79        |
| pumps                           | 77 | 71        |
| Compressor (air)                | 80 | 74        |
| Welder/Torch                    | 74 | 68        |
| Generator                       | 82 | 76        |
| Ventilation Fan                 | 79 | 73        |
| auger drill rig                 | 84 | 78        |
| grouting machine                | 77 | 71        |
| Concrete Mixer Truck            | 79 | 73        |
| Concrete Vibrator               | 76 | 70        |
| scraper                         | 85 | 79        |
| tractor                         | 84 | 78        |
| man lift                        | 75 | 69        |
| Mounted Impact Hammer (hoe ram) | 90 | <b>84</b> |
| grader                          | 85 | 79        |

### 3.1.2 Construction Noise: Daytime at Sensitive Receptors

The noise level at each sensitive receptor is calculated assuming simultaneous operation of the two loudest pieces of equipment at the closest project component. Table 3-2 summarizes the noise level anticipated at each identified representative sensitive receptor during daytime. Table 3-3 summarizes the noise level anticipated at each sensitive receptor corresponding to the activities when pile-driving is required. The loudest two pieces of equipment for each of the items in Table 3-2 and Table 3-3 are shown in Attachment A and Attachment B respectively for reference. The amount of mitigation necessary to ensure the project noise criteria are met is included in the table as well.

**Table 3-2 Noise Level at Sensitive Receptors Due to Construction Equipment (Daytime)**

| Sensitive Receptor ID (Baseline Survey ID) <sup>1</sup> | Address                                  | Construction Activity | Estimated Duration                               | Loudest Source-1 | Loudest Source-2 | Distance to Sensitive Receptor (feet) | Combined Level, $L_{eq}$ dBA at Receptor | Daytime Criteria: Ambient ( $L_{eq}$ ) + 10 dBA | Impact: 90 dBA and/or Ambient + 10 dBA (Mitigation Required, dBA) |
|---------------------------------------------------------|------------------------------------------|-----------------------|--------------------------------------------------|------------------|------------------|---------------------------------------|------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------|
| R1 (M1)                                                 | 19 Lake Merced Blvd (Lowell High School) | Soil Improvements     | 3 to 9 months per segment                        | Concrete Saw     | Concrete Mixer   | 20                                    | 93                                       | 81                                              | Yes (12)                                                          |
| R2 (M2)                                                 | 701 Sloat Blvd (residence)               | Vaults                | 2 to 3 weeks per vault                           | Concrete Saw     | Paver            | 15                                    | 96                                       | 80                                              | Yes (16)                                                          |
| R4 (M2)                                                 | 345 Sloat Blvd (residence)               | Open-Trench           | 2 months at Sloat & 19th                         | Concrete Saw     | Paver            | 110                                   | 79                                       | 80                                              | No                                                                |
| R8 (M3)                                                 | 1801 Taraval St (residence)              | Trenchless            | 11 weeks <sup>2</sup> (day) at each intersection | Concrete Saw     | Paver            | 20                                    | 93                                       | 75                                              | Yes (18)                                                          |
| R9 (M4)                                                 | 3645 Judah St (residence)                | Trenchless            | 11 weeks <sup>2</sup> (day) at each intersection | Concrete Saw     | Paver            | 20                                    | 93                                       | 76                                              | Yes (17)                                                          |

Notes: <sup>1</sup> IDs R1-R9 are sensitive receptor locations, IDs M1-M4 are measurement locations. Only the receptors near construction activities that are quantitatively analyzed are listed above. Project components listed under the construction activity are not meant to be comprehensive of all activities at each location. For example, open trench pipeline construction would occur throughout the project area, including at or near these locations.

<sup>2</sup>The trenchless activities would be approximately 11 weeks, predominately constructed during the day, with up to 6 nights of construction if required.

dBA = A-weighted decibels

$L_{eq}$  = equivalent noise level

Based on the calculated noise levels shown in Table 3-3, the project noise levels are expected to exceed the limit (90dBA and/or Ambient +10dBA) at sensitive receptors during soil improvements, vault construction and trenchless construction activities. Specifically, the project noise criteria are expected to be exceeded due to equipment used during the following activities: soil improvements within 85 feet of sensitive receptors represented by R1, vault construction within 95 feet of sensitive receptors and trenchless construction within 170 feet of sensitive receptors represented by R8 and R9.<sup>1</sup> The equation used to calculate the noise level in the table above was used to obtain these distances. In addition to the source noise level, the predicted noise level at a receiver is dependent on the distance from the source and the ambient noise level at the receiver. Therefore, the noise level at two receivers at the same distance from the same noise source may not be the same if the ambient levels are different at the respective receivers.

In addition, when pile-driving is deemed necessary, the project noise limits are expected to be exceeded at the sensitive receptors during vault construction, open-trench construction and trenchless construction as identified in Table 3-3.

Based on the calculated noise levels shown in Table 3-3, the project noise levels are expected to exceed the limit at sensitive receptors during the following: vault construction within 145 feet of sensitive

<sup>1</sup> The distances noted here are the calculated distances where noise levels could exceed criteria; these distances may differ from the distances to sensitive receptors noted in the table. Construction activities are analyzed based on the combination of the two loudest equipment that could be simultaneously operating. Similarities exist between the project components and the construction equipment used and therefore the analysis may apply across project components.

receptors and trenchless construction within 260 feet of sensitive receptors represented by R8, and 240 feet from R9.

**Table 3-3 Noise Level at Sensitive Receptors Due to Construction Equipment (Daytime)**  
(If Pile-driving is needed)

| Sensitive Receptor ID (Baseline Survey ID) <sup>1</sup> | Address                    | Construction Activity | Estimated Duration                               | Loudest Source-1    | Loudest Source-2 | Distance to Sensitive Receptor (feet) | Combined Level, L <sub>eq</sub> dBA at Receptor | Daytime Criteria: Ambient (L <sub>eq</sub> ) + 10 dBA | Impact: 90 dBA and/or Ambient + 10 dBA (Mitigation required, dBA) |
|---------------------------------------------------------|----------------------------|-----------------------|--------------------------------------------------|---------------------|------------------|---------------------------------------|-------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------|
| R2 (M2)                                                 | 701 Sloat Blvd (residence) | Vaults                | 2 to 3 weeks per vault                           | Pile-driver (Sonic) | Concrete Saw     | 15                                    | 100                                             | 80                                                    | Yes (12)                                                          |
| R4 (M2)                                                 | 345 Sloat Blvd (residence) | Open-Trench           | 2 months at Sloat & 19th                         | Pile-driver (Sonic) | Concrete Saw     | 110                                   | 82                                              | 80                                                    | Yes (2)                                                           |
| R8 (M3)                                                 | 1801 Taraval St            | Trenchless            | 11 weeks <sup>2</sup> (day) at each intersection | Pile-driver (Sonic) | Concrete Saw     | 20                                    | 97                                              | 75                                                    | Yes (22)                                                          |
| R9 (M4)                                                 | 3645 Judah St (residence)  | Trenchless            | 11 weeks <sup>2</sup> (day) at each intersection | Pile-driver (Sonic) | Concrete Saw     | 20                                    | 97                                              | 76                                                    | Yes (21)                                                          |

Notes: <sup>1</sup>IDs R1-R9 are sensitive receptor locations, IDs M1-M4 are measurement locations. Only the receptors near activities that are quantitatively analyzed are listed above.

<sup>2</sup>The trenchless activities would be approximately 11 weeks, predominately constructed during the day, with up to 6 nights of construction if required (as analyzed further below).

dBA = A-weighted decibels

L<sub>eq</sub> = equivalent noise level

### 3.2 Construction Noise - Nighttime

The nighttime analysis focuses on trenchless construction activities at intersections along the N Judah and L Taraval Muni light rail lines, where nighttime construction may be needed to avoid disrupting transit. The locations where nighttime trenchless work is planned are shown in Figure 1 of the Methodology Memorandum. While the trenchless construction would be approximately 11 weeks at each intersection, with construction predominantly during the daytime, limited nighttime work may occur at some locations, up to approximately 6 nights. Table 3-4 shows the exterior noise level, calculated at the residential receptor closest to these activities. Further, the resulting interior noise level is calculated using a 15 dB reduction to account for outside-inside transmission, assuming open windows. The trenchless nighttime construction phase was analyzed with four possible scenarios, which reflect the possible construction equipment that may be employed at the time of construction corresponding to Mining and Welding phases. The possible scenarios presented in Table 3-4 reflect the two loudest equipment operating simultaneously. The amount of mitigation necessary to be below the noise criteria is included in the table as well.

Whereas the nighttime trenchless activities are anticipated to result in the project noise criterion to be exceeded at the closest applicable sensitive receptors identified in Table 3-4, any residences within 500 feet from the construction equipment would exceed the nighttime noise criterion as well. The equation used to calculate the noise level in the table above was used to obtain these distances.



**Table 3-4 Noise Level at Sensitive Receptors Due to Construction Equipment (Nighttime)**

| Sensitive Receptor ID (Baseline Survey ID) <sup>1</sup> | Construction Activity | Loudest Source-1    | Loudest Source-2    | Distance to Sensitive Receptor (feet) | Combined Level, L <sub>eq</sub> dBA at Receptor | Nighttime Criteria: Ambient (L <sub>eq</sub> ) + 5 dBA | Nighttime Criteria: 60 dBA Exterior Noise Level <sup>2</sup> | Exceeds Ambient + 5 dBA and/or 45 dBA Interior Noise Level, (Mitigation required, dBA) |
|---------------------------------------------------------|-----------------------|---------------------|---------------------|---------------------------------------|-------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------|
| R9 (M4)                                                 | Trenchless [Mining]   | Auger Drill Rig     | Grouting Machine    | 20                                    | 85                                              | 67                                                     | 60                                                           | Yes (25)                                                                               |
| R9 (M4)                                                 | Trenchless [Mining]   | Crane               | Generator           | 20                                    | 88                                              | 67                                                     | 60                                                           | Yes (28)                                                                               |
| R9 (M4)                                                 | Trenchless [Mining]   | Dump Truck          | Crane               | 20                                    | 84                                              | 67                                                     | 60                                                           | Yes (24)                                                                               |
| R9 (M4)                                                 | Trenchless [Welding]  | Welder <sup>3</sup> | Welder <sup>3</sup> | 20                                    | 78                                              | 67                                                     | 60                                                           | Yes (18)                                                                               |
| R9 (M4)                                                 | Trenchless [Welding]  | Welder <sup>3</sup> | Man Lift            | 20                                    | 79                                              | 67                                                     | 60                                                           | Yes (19)                                                                               |

Notes: <sup>1</sup>IDs R1-R9 are sensitive receptor locations, IDs M1-M4 are measurement locations. R9 represents the closest residential receptor to these activities. Up to approximately 6 nights of work may occur at certain trenchless crossing locations. Different construction activities such as mining or welding with different combinations of equipment may occur as listed here for part of the work duration.

dBA = A-weighted decibels

L<sub>eq</sub> = equivalent noise level

<sup>2</sup>A 15 dB noise reduction is assumed with windows open Thus 45 dBA interior translates to 60 dBA exterior level.

<sup>3</sup>A 3 dB noise reduction is assumed to account for the depth of the pit.

### 3.3 Construction Vibration at Sensitive Receptors: Structural Damage

Construction equipment vibration levels have been assessed for potential structural and cosmetic damage at structures used identified in Table 2 of the methodology memorandum using the California Department of Transportation (Caltrans) Vibration prediction equation, which is shown below for reference.

$$PPV_{equip} = PPV_{ref} \times \left(\frac{25}{D}\right)^{1.5}$$

Where: PPV<sub>Equipment</sub> = resulting vibration due to the source equipment, inches per second (in/s)

D = distance from equipment to the receiver in feet

PPV<sub>Ref</sub> = the source reference vibration level at 25 feet, peak particle velocity (PPV) in/s

n = the value related to the attenuation rate through ground

The reference PPV levels for construction equipment listed in the equipment schedule are obtained from the FTA Transit Noise and Vibration Impact Assessment Manual's Table 7-4.1). Furthermore, the suggested value of n = 1.1 is used, based on Caltrans Transportation and Construction Vibration Guidance Manual. Table 3-5 summarizes the calculated vibration level in terms of PPV at each representative sensitive receptor closest to the corresponding construction equipment location.

The calculations indicate that the vibration level due to construction would not exceed the criteria during the construction of the project components, unless a larger or generic vibratory roller (highway class size) is used (i.e., larger rollers are typically used for freeway or airport runway paving and vibration levels are published by the FTA). However, if a smaller 12-ton vibratory roller is used, vibration levels would not exceed criteria. The analysis results shown in Table 3-5 reflect the calculated levels at the closest sensitive receptor based on the location of the construction equipment as vibration sources.

**Table 3-5 Vibration Level Due to Construction Equipment –Damage to Structures Analysis**

| <b>Sensitive Receptor ID</b> | <b>Receptor Address</b>                       | <b>Distance to Receptor<sup>1</sup></b> | <b>Construction Activity</b> | <b>Primary Vibratory Equipment</b>     | <b>Reference Level at 25 Feet, PPV in/s</b> | <b>Calculated Level at Receptor, PPV in/s</b> | <b>Continuous Vibration Criteria<sup>1</sup>, PPV in/s</b> | <b>Exceeds Limit?</b> |
|------------------------------|-----------------------------------------------|-----------------------------------------|------------------------------|----------------------------------------|---------------------------------------------|-----------------------------------------------|------------------------------------------------------------|-----------------------|
| R1                           | 19 Lake Merced Blvd. (Lowell High School)     | 50                                      | Soil Improvements            | Drill Rig                              | 0.089                                       | 0.042                                         | 0.300                                                      | No                    |
| R2                           | 701 Sloat Blvd (residence)                    | 25                                      | Vaults                       | Vibratory Roller (12-ton) <sup>2</sup> | 0.067                                       | 0.067                                         | 0.300                                                      | No                    |
| R3                           | 660 Sloat Blvd (residence)                    | 20                                      | Open-Trench                  | Vibratory Roller (12-ton)              | 0.067                                       | 0.086                                         | 0.300                                                      | No                    |
| R4                           | 345 Sloat Blvd (residence)                    | 110                                     | Open-Trench                  | Vibratory Roller (12-ton)              | 0.067                                       | 0.013                                         | 0.300                                                      | No                    |
| R5                           | 2930 23rd Ave (existing Central Pump Station) | 20                                      | New Pump Station 1           | Vibratory Roller (12-ton)              | 0.067                                       | 0.086                                         | 0.250                                                      | No                    |
| R6                           | 2006 24th Ave (residence)                     | 50                                      | New Pump Station 2           | Vibratory Roller (12-ton)              | 0.067                                       | 0.031                                         | 0.300                                                      | No                    |
| R7                           | 1907 28th Ave (residence)                     | 20                                      | Open-Trench                  | Vibratory Roller (12-ton)              | 0.067                                       | 0.086                                         | 0.300                                                      | No                    |
| R8                           | 1801 Taraval St (residence)                   | 15                                      | Trenchless                   | Vibratory Roller (12-ton)              | 0.067                                       | 0.118                                         | 0.300                                                      | No                    |
| R9                           | 3645 Judah St (residence)                     | 15                                      | Trenchless                   | Vibratory Roller (12-ton)              | 0.067                                       | 0.118                                         | 0.300                                                      | No                    |
| R2                           | 701 Sloat Blvd (residence)                    | 25                                      | Vaults                       | Vibratory Roller (highway class size)  | 0.210                                       | 0.210                                         | 0.300                                                      | No                    |
| R3                           | 660 Sloat Blvd (residence)                    | 20                                      | Open-Trench                  | Vibratory Roller                       | 0.210                                       | 0.268                                         | 0.300                                                      | No                    |

| Sensitive Receptor ID | Receptor Address                              | Distance to Receptor <sup>1</sup> | Construction Activity | Primary Vibratory Equipment            | Reference Level at 25 Feet, PPV in/s | Calculated Level at Receptor, PPV in/s | Continuous Vibration Criteria <sup>1</sup> , PPV in/s | Exceeds Limit? |
|-----------------------|-----------------------------------------------|-----------------------------------|-----------------------|----------------------------------------|--------------------------------------|----------------------------------------|-------------------------------------------------------|----------------|
|                       |                                               |                                   |                       | (highway class size)                   |                                      |                                        |                                                       |                |
| R4                    | 345 Sloat Blvd (residence)                    | 110                               | Open-Trench           | Vibratory Roller (highway class size)  | 0.210                                | 0.041                                  | 0.300                                                 | No             |
| R5                    | 2930 23rd Ave (existing Central Pump Station) | 20                                | New Pump Station 1    | Vibratory Roller ((highway class size) | 0.210                                | <b>0.268</b>                           | 0.250                                                 | <b>Yes</b>     |
| R6                    | 2006 24th Ave (residence)                     | 50                                | New Pump Station 2    | Vibratory Roller (highway class size)  | 0.210                                | 0.098                                  | 0.300                                                 | No             |
| R7                    | 1907 28th Ave (residence)                     | 20                                | Open-Trench           | Vibratory Roller (highway class size)  | 0.210                                | 0.268                                  | 0.300                                                 | No             |
| R8                    | 1801 Taraval St (residence)                   | 15                                | Trenchless            | Vibratory Roller (highway class size)  | 0.210                                | <b>0.368</b>                           | 0.300                                                 | <b>Yes</b>     |
| R9                    | 3645 Judah St (residence)                     | 15                                | Trenchless            | Vibratory Roller ((highway class size) | 0.210                                | 0.368                                  | 0.300                                                 | <b>Yes</b>     |

Notes: Continuous vibration limits applicable to “older residential structures” per Caltrans Vibration Guidance Manual; except existing Central Pump Station (to remain) which is a historic building. The vibration limit of 0.3 PPV applies to older residential structures, while a limit of 0.25 PPV is applicable to historic buildings.

<sup>1</sup>The distance used for vibration calculations is to the building façade from the edge of the sidewalk. Distance from midpoint between the center of the street and parking lane to property line is used for noise calculations. Thus, distance to receptor may vary between the noise and vibration tables.

Source: California Department of Transportation, Transportation and Construction Vibration guidance Manual (September 2020); Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)

<sup>2</sup> The reference vibration level for a 12-ton vibratory roller, which is applicable to this project was obtained from the data provided in Technical Memorandum for the PG&E Power Asset Acquisition Project.

in/s = inches per second

PPV = peak particle velocity

### 3.3.1 Construction Equipment: Minimum Setbacks required

The vibration generating equipment employed on the project are identified. The reference vibration level due to the equipment based on FTA guidelines are determined. The respective reference vibration levels are used to calculate the distance which would result in a 0.25 in/s and 0.3 in/s PPV. These distances are presented in Table 3-6, which are the recommended equipment setbacks required to avoid vibration damage impacts for structures falling under the historic and older building categories respectively.

**Table 3-6 Minimum Equipment Setback Distance –Damage to Structures Analysis**

| Equipment                                                             | Reference PPV at 25 feet | Minimum Distance to Historic Buildings - 0.25 in/sec PPV (continuous) | Minimum Distance to Older Buildings (typ.) - 0.3 in/sec PPV (continuous) |
|-----------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------|
| Vibratory Pile Driver                                                 | 0.170                    | 18 feet                                                               | 15 feet                                                                  |
| Vibratory Roller (Generic; highway class size)) <sup>1</sup>          | 0.210                    | 22 feet                                                               | 19 feet                                                                  |
| Vibratory Roller (12-ton) <sup>2</sup>                                | 0.067                    | 8 feet                                                                | 7 feet                                                                   |
| Hoe Ram                                                               | 0.089                    | 10 feet                                                               | 9 feet                                                                   |
| Large Bulldozer/Excavator/Loader/Backhoe (>20,000lb Operating Weight) | 0.089                    | 10 feet                                                               | 9 feet                                                                   |
| Drill Rig                                                             | 0.089                    | 10 feet                                                               | 9 feet                                                                   |

Source: California Department of Transportation, Transportation and Construction Vibration guidance Manual (September 2020); Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)

Notes: <sup>1</sup>FTA does not explicitly provide the size (tonnage) of the vibratory roller.

<sup>2</sup> The reference vibration level for a 12-ton vibratory roller, which is applicable to this project was obtained from the data provided in Technical Memorandum for the PG&E Power Asset Acquisition Project.

### 3.3.2 Vibration Impacts to Buildings Adjacent to Construction

Paving activities involved in pump station construction, linear trenching and vault construction along the pipeline alignment will involve equipment such as vibratory rollers. These activities can generate ground borne vibration that may pose risks to structures located adjacent to the construction area, particularly within dense urban neighborhoods.

Vibration levels were evaluated at varying distances for representative construction equipment corresponding to the project equipment list. Table 3-7 below presents estimated Peak Particle Velocity (PPV) levels for linear trenching equipment:

**Table 3-7 Vibration Levels Due to Construction Equipment**

| Equipment                           | Reference PPV at 25 feet | PPV at 20ft | PPV at 50ft | PPV at 110ft |
|-------------------------------------|--------------------------|-------------|-------------|--------------|
| Vibratory Roller (Generic from FTA) | 0.210                    | 0.268       | 0.098       | 0.041        |
| Vibratory Roller (12-ton)           | 0.067                    | 0.086       | 0.031       | 0.013        |
| Jackhammer                          | 0.035                    | 0.045       | 0.016       | 0.007        |
| Pile Driver (Sonic/Vibratory)       | 0.170                    | 0.217       | 0.079       | 0.033        |

Source: California Department of Transportation, Transportation and Construction Vibration guidance Manual (September 2020); Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)

As shown in Table 3-7 above, the vibration level generated by the 12-ton vibratory roller at residences at 20 feet is within the limit for continuous vibration of 0.3 in/s applicable to old residential structures. Also, the vibration level calculated at the new emergency pump station 1 meets the respective limit of 0.25 in/s for historical structures.

The reference vibration level provided by FTA does not specify the size of the vibratory roller; however, it can be inferred that these correspond to equipment larger than a 12-ton vibratory roller. If a vibratory roller larger than a 12-ton roller is used, the vibration level calculated at the new

emergency pump station 1 of 0.268 in/s exceeds the respective limit of 0.25 in/s for historical structures.

### 3.3.3 Construction Vibration at Sensitive Receptors: Sleep Disturbance

Nighttime construction equipment vibration levels have been assessed for potential sleep disturbance at residential buildings identified in Table 3-8 using the FTA prediction equation, which is shown below for reference.

$$L_{v.distance} = L_{v.ref} - 30 \log\left(\frac{D}{25}\right)$$

Where:  $L_{v.distance}$  = the rms velocity level adjusted for distance, VdB

$L_{v.ref}$  = the source reference vibration level at 25 ft, VdB

D = distance from the equipment to the receiver, ft

Table 3-8 summarizes the calculated vibration level in terms of VdB at each identified sensitive receptor closest to the corresponding construction activity that would experience.

**Table 3-8 Vibration Level Due to Construction Equipment – Sleep Disturbance Analysis**

| Sensitive Receptor ID | Receptor Address          | Distance to Receptor | Construction Activity | Primary Vibratory Equipment | Reference Level at 25 Feet, $L_v$ (VdB) | Calculated Level at Receptor, $L_v$ (VdB) | Sleep Disturbance Vibration Limit <sup>1</sup> , $L_v$ (VdB) | Exceeds Limit? |
|-----------------------|---------------------------|----------------------|-----------------------|-----------------------------|-----------------------------------------|-------------------------------------------|--------------------------------------------------------------|----------------|
| R9                    | 3645 Judah St (residence) | 15                   | Trenchless (Night)    | Auger Drill Rig             | 87                                      | 94                                        | 72                                                           | Yes            |

Notes:

Sleep disturbance analysis is warranted if nighttime work is planned in the vicinity of sensitive receptors that house people sleeping at night. Therefore, other sensitive receptors (like schools) are omitted from this table.

in/s = inches per second

PPV = peak particle velocity

As shown in the table above, it is predicted that the nighttime trenchless construction at the Muni crossings would cause sleep disturbance at the closest residential receptor, which was identified to be at 15 feet. Using the equation above, the criterion for sleep disturbance is expected to be exceeded at residential receivers within 80 feet from the trenchless construction locations.

### 3.4 Project Operation

The proposed project's operational noise impacts are expected to be minimal due to the infrequent and limited duration of mechanical equipment use. The appurtenances associated with the pipeline infrastructure include aboveground cabinets and belowground valve vaults none of which generate operational noise. The pipeline infrastructure and the appurtenances require only periodic maintenance, which would generate an insignificant amount of noise.

The pump stations would require minimal operational maintenance. San Francisco Public Utilities Commission staff would test the equipment at the emergency pump stations periodically, but extended hours of operation of the pump stations would only occur during emergencies.

At pump station 1 (Central Pump Station/ Merced Manor Reservoir), three 1,000-1,500 horsepower diesel-engine pumps with 15,000 gallons per minute capacity, would be housed inside the new pump station. The supporting aboveground fuel and surge tanks will be housed adjacent to the new building.



Similarly, pump station 2 (Sunset Reservoir) will include three pumps of identical capacity within the pump station and comparable fuel/surge tanks. Both pump stations will conduct monthly pump tests lasting approximately one hour, with no continuous operation, except during emergencies when pumps and generator would operate continuously. Evaluation of emergency operations is speculative as the duration and frequency is unknown.

Additionally, a 2.5-megawatt backup generator would be installed within the Lake Merced Pump Station buildings for emergency power supply. The backup generator would undergo monthly approximately 15-minute tests, with two full-load tests per year lasting approximately four hours. The station currently has three existing backup generators (two 2.5 megawatt and one 375 kilowatt). Therefore, adding one 2.5 megawatt backup generator would not cause a significant rise in noise level even with the generator operating alongside the existing three (total four). Assuming noise level from a generator is 82 dBA at 50 feet (see Table 10), the three existing generators would produce 87 dBA at 50 feet when operating together and adding a fourth generator would increase the noise level to 88 dBA, which is an imperceptible change. Also note that the generators would be enclosed within a building, which would further reduce noise levels below those stated here. Additionally, residences are over 300 feet away from the Lake Merced Pump Station.

Given the short duration of regular testing of the backup generators and emergency pumps, the planned location of the pumps and backup generators interior to the buildings, absence of routine noisy activities, the project's contribution to the ambient noise environment from these sources would be minimal.

In addition, operational and maintenance activities would not require additional staff specific to this project, nor would they result in a change to traffic volumes. Noise and vibration sources and activities from the aforementioned discussion would therefore be negligible.

The project proposes to place new HVAC equipment such as exhaust fans and A/C units exterior to the building. Depending on the size and operational conditions, HVAC equipment and exhaust fans can produce noise levels in the range of 70-75 dBA at a distance of 50 feet. Introduction of stationary noise sources would require compliance with San Francisco Police Code section 2909. Section 2909 (b) specifically prohibits fixed mechanical equipment noise from commercial sources in excess of 8 dBA above the ambient noise level at the property plane and Section 2909 (d) which prohibits fixed mechanical equipment from exceeding an interior noise limit at the nearest sensitive receptor of 45 dBA at night or 55 dBA during the day measured from any bedroom or living room. The ambient noise measurements performed at various locations across the project range from 65 to 71 dBA during daytime and 58 to 65 dBA during nighttime. Adding multiple exterior mechanical equipment therefore could potentially exceed the SF Police Code noise limits. With the implementation of Noise Reduction Measure (4.1.2 below), which requires HVAC enclosures or other modifications to ensure compliance with San Francisco Police Code section 2909, the operational noise levels are expected to comply with Section 2909 of the Police Code.

#### **4. Noise and Vibration Reduction Measures**

The noise and vibration calculations performed at the chosen sensitive receptors are a representation of the predicted levels due to construction activities at all receptors along the project alignment, which are at similar distances from the corresponding equipment (source). The calculations show that noise and vibration from construction activity are expected to exceed the respective limits. Noise Reduction measures are discussed in this section to address these impacts.

## **4.1 Noise Reduction Measures**

### **4.1.1 Noise Reduction Measures: Construction Noise Control**

Based on the analysis results discussed and the sensitive receptors where the noise limits are exceeded, this measure applies to the following project construction activities:

- 1) vibratory pile driving within 170 feet of noise-sensitive receptors for a period of two weeks or longer,
- 2) use of impact pile driving for any duration of time
- 3) all nighttime trenchless construction within 500 feet of noise-sensitive receptors
- 4) all nighttime work that would occur for more than three consecutive nights or up to nine nights within a 90-day period within 500 feet of noise-sensitive receptors; and,
- 5) soil improvements within 50 feet of schools.

Prior to the start of construction, the SFPUC shall submit a project-specific construction noise control plan to the ERO or the ERO's designee for approval if any of the above construction activities would occur. The construction noise control plan shall be prepared by a qualified acoustical engineer, with input from the construction contractor, and include all feasible measures to reduce construction noise. The construction noise control plan shall discuss the contractor's planned construction activities and identify noise control measures to meet a performance target of construction activities resulting in a noise level less than 90 dBA 1-hour  $L_{eq}$ , 10 dBA above the ambient noise level, or an interior level of 45 dBA during nighttime hours at noise sensitive receptors (residences, hospitals, convalescent homes, schools, churches, and hotels and motels); and daytime construction noise to a performance target of 100 dBA exterior noise level at commercial receptors.. The SFPUC shall ensure that the requirement for the construction contractor to submit a noise control plan prepared by a qualified acoustical engineer is included in contract specifications along with the measures listed below.

Where nighttime construction is required, the plan shall include specific measures to reduce nighttime construction noise. The plan shall also include measures for notifying the public of construction activities, complaint procedures, and a plan for monitoring construction noise levels in the event complaints are received.

The construction noise control plan shall include the following measures to the degree feasible, or other effective measures (as determined by the ERO), to reduce construction noise levels:

- Use construction equipment that is in good working order, and inspect mufflers for proper functionality;
- Select "quiet" construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures);
- Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors;
- Prohibit the idling of inactive construction equipment for more than five minutes;
- Locate stationary noise sources (such as compressors) as far from nearby noise sensitive receptors as possible, muffle such noise sources, and construct barriers around such sources and/or the construction site.

- Avoid placing stationary noise-generating equipment (e.g., generators, compressors) within noise-sensitive buffer areas (as determined by the acoustical engineer) immediately adjacent to neighbors.
- Enclose or shield stationary noise sources from neighboring noise-sensitive properties with noise barriers to the extent feasible. To further reduce noise, locate stationary equipment in pit areas or excavated areas, if feasible; and
- Install temporary barriers, barrier-backed sound curtains and/or acoustical panels around working powered impact equipment and, if necessary, around the project site perimeter. When temporary barrier units are joined together, the mating surfaces shall be flush with each other. Gaps between barrier units, and between the bottom edge of the barrier panels and the ground, shall be closed with material that completely closes the gaps, and dense enough to attenuate noise. The temporary noise barriers in the analysis assumed a noise reduction of 15 dB.

The construction noise control plan shall include the following measures for notifying the public of construction activities, complaint procedures and monitoring of construction noise levels:

- Designation of an on-site construction noise manager for the project;
- Notification of neighboring noise sensitive receptors within 300 feet of the project construction area at least 30 days in advance of high-intensity noise-generating activities (e.g., pier drilling, pile driving, and other activities that may generate noise levels greater than 90 dBA at noise sensitive receptors or 100 dBA at commercial receptors) about the estimated duration of the activity;
- A sign posted on-site describing noise complaint procedures and a complaint hotline number that shall always be answered during construction;
- A procedure for notifying the planning department of any noise complaints within one week of receiving a complaint;
- A list of measures for responding to and tracking complaints pertaining to construction noise. Such measures may include the evaluation and implementation of additional noise controls at sensitive receptors; and
- Conduct noise monitoring (measurements) at the beginning of major construction phases (e.g., demolition, grading, excavation) and during high-intensity construction activities to determine the effectiveness of noise attenuation measures and, if necessary, implement additional noise control measures.
- The construction noise control plan shall include the following additional measures during pile-driving activities:
- When pile driving is to occur within 260 feet of a noise-sensitive receptor, implement “quiet” pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving duration [only if such measure is preferable to reduce impacts to sensitive receptors]) where feasible, in consideration of geotechnical and structural requirements and conditions;

- Properly fit impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer; and
- Conduct noise monitoring (measurements) before, during, and after the pile driving activity.

With the aforementioned noise reduction strategies incorporated, the daytime noise level at the respective closest sensitive receptors is expected to meet the 90 dBA 1-hour Leq and ambient +10 dBA limits.

#### **4.1.2 Noise Reduction Measures: Operational Noise Analysis and Attenuation of Stationary Noise Sources**

This measure applies to installation of noise-generating activities or equipment (heating , ventilation, and air conditioning equipment including exhaust fans) at emergency pump stations 1 and 2.

Prior to construction at new emergency pump stations 1 and 2, the SFPUC shall submit documentation to the Environmental Review Office (ERO) or the ERO's designee, demonstrating with reasonable certainty that the proposed design of the heating, ventilation, and air conditioning equipment meets the noise limits specified in section 2909 of the San Francisco Police Code (i.e., an 8 dB increase above the ambient noise level at the property plane for noise from commercial or industrial uses and interior noise limits of 55 dBA and 45 dBA for daytime and nighttime hours inside any sleeping or living room in a nearby dwelling unit on a residential property assuming windows open, respectively). The analysis shall be prepared by persons qualified in acoustical analysis and/or engineering. All recommendations from the acoustical analysis necessary to ensure that noise sources would meet applicable requirements of the noise ordinance and/or not result in substantial increases in ambient noise levels shall be incorporated into the building design and operations. Acoustical treatments required to meet the noise limits in the San Francisco Police Code may include but are not limited to:

- Enclosing noise-generating mechanical equipment;
- Installing relatively quiet models of air handlers, exhaust fans, and other mechanical equipment;
- Using mufflers or silencers on equipment exhaust fans;
- Orienting or shielding equipment to protect noise sensitive receptors (residences, hospitals, convalescent homes, schools, churches, hotels and motels, and sensitive wildlife habitat) to the greatest extent feasible;
- Increasing the distance between noise-generating equipment and noise-sensitive receptors; and/or
- Placing barriers around the equipment to reduce noise.

## 4.2 Vibration Reduction Measures

### 4.2.1 Vibration Reduction during Construction

Prior to the start of construction for each phase of the project, the SFPUC shall complete a screening-level analysis comparing vibration levels for various pieces of equipment with the distance to adjacent buildings or structures. If the minimum equipment setback distances for the use of vibratory equipment in the table below can be met and groundborne vibration would not result in building damage or sleep disturbance, then a Vibration Management and Monitoring Plan does not need to be prepared, and the remainder of this measure is not applicable. The screening-level analysis shall be submitted to the ERO or the ERO's designee for approval. The construction contract specifications shall require contractors to avoid use of vibratory equipment within the following setback distances from buildings as well as during any nighttime trenchless construction within 80 feet of residential structures.

However, if vibratory equipment must be used within the vibration minimum setback distances or nighttime work must occur within the vibration setback distances noted below, then a Vibration Management and Monitoring Plan shall be required as described below.

#### Vibration Minimum Setback Distances –

| Equipment                                                             | Reference PPV at 25 feet | Minimum Setback Distance to Historic Buildings - 0.25 in/sec PPV (continuous) | Minimum Setback Distance to Older Buildings (typ.) - 0.3 in/sec PPV (continuous) |
|-----------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Vibratory Pile Driver                                                 | 0.170                    | 18 feet                                                                       | 15 feet                                                                          |
| Vibratory Roller (highway class size) <sup>1</sup>                    | 0.210                    | 22 feet                                                                       | 19 feet                                                                          |
| Vibratory Roller (12-ton) <sup>2</sup>                                | 0.067                    | 8 feet                                                                        | 7 feet                                                                           |
| Hoe Ram                                                               | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |
| Large Bulldozer/Excavator/Loader/Backhoe (>20,000lb Operating Weight) | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |
| Drill Rig                                                             | 0.089                    | 10 feet                                                                       | 9 feet                                                                           |

<sup>1</sup>Source: California Department of Transportation, Transportation and Construction Vibration guidance Manual (September 2020); Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)

<sup>2</sup>Source: Noise Technical Memorandum – PG&E Power Asset Acquisition Project, “Calculation of peak particle velocity using a 12-ton Roller” (2025)

#### Vibration Management and Monitoring Plan –

Prior to construction, the SFPUC shall submit a project-specific Vibration Management and Monitoring Plan to the ERO or the ERO's designee for approval if required per above. The plan shall identify all feasible means to avoid damage to potentially affected buildings. The Vibration Management and Monitoring Plan shall be prepared by a qualified vibration engineer, with input from the construction contractor, and the contract specifications shall include the requirement for this plan, as necessary, along with the measures below.

The Vibration Management and Monitoring Plan shall include, at a minimum, the following components, as applicable:



- *Pre-construction Survey* – Prior to the start of ground-disturbing activity, the SFPUC or its contractor shall engage a consultant to undertake a pre-construction survey of potentially affected buildings where vibratory equipment must be used at and within the vibration minimum setback distances and shall document existing damage, such as cracks and loose or damaged features (as allowed by property owners). The survey shall be done by a qualified professional (e.g. a licensed engineer or acoustical consultant) who shall document and photograph the existing conditions of the potentially affected buildings and/or structures. The SFPUC shall submit the survey to the ERO or the officer's designee for review and approval prior to the start of vibration-generating construction activity.
- If nearby affected buildings are designated as historic, the survey shall additionally include descriptions and photograph of all designated historic buildings (such as the existing Central Pump Station) prepared by a qualified historic preservation professional including all facades, roofs, and details of the character-defining features that could be damaged during construction, and shall document existing damage, such as cracks and loose or damaged features (as allowed by property owners). The report shall also include pre-construction drawings that record the pre-construction condition of the buildings and identify cracks and other features to be monitored during construction. The qualified historic preservation professional shall be the lead author of the pre-construction survey if historic buildings and/or structures could be affected by the project. The SFPUC shall submit the survey for review and approval prior to the start of vibration-generating construction activity.
- *Maximum Vibration Level*. Based on the anticipated construction and condition of the affected buildings and/or structures on adjacent properties, a qualified acoustical/vibration consultant in coordination with a structural engineer (or professional with similar qualifications) and, in the case of potentially affected historic buildings/structures, a qualified historic preservation professional, shall establish a maximum vibration level that shall not be exceeded at each building/structure on adjacent properties, based on existing conditions, character-defining features, soil conditions, and anticipated construction practices (common standards are a peak particle velocity [PPV] of 0.25 inch per second for historic and some old buildings, a PPV of 0.3 inch per second for older residential structures, and a PPV of 0.5 inch per second for new residential structures and modern industrial/commercial buildings).
- *Vibration-generating Equipment*. The plan shall identify all vibration-generating equipment to be used during construction at applicable locations and identify potential alternative equipment and techniques that could be implemented if construction vibration levels are observed to meet or exceed the established criterion based on soil conditions. Such methods may include one or more of the following:
  - Use a smaller 12-ton or 8-ton roller, a vibratory roller with reduced vibration amplitude settings, or hand-held “jumping jack” compactor
  - Incorporate non vibratory pile driving shoring methods (i.e., trench boxes) and/or “quiet” pile-driving technologies into project construction (such as pre-drilled shafts drilled shafts, hydraulic pile driving methods, sonic pile drivers, auger cast-in-place, variable speed vibratory, micro-piling, or drilled-displacement), as feasible; and/or as needed to meet established criteria.
  - Ensure appropriate excavation shoring methods to prevent the movement of adjacent structures.

- *Alternative Construction Equipment and Techniques.* The plan shall identify potential alternative equipment and techniques that could be implemented if construction vibration levels are observed in excess of the established standard (e.g., drilled shafts [caissons] could be substituted for driven piles, if feasible, based on soil conditions, or smaller, lighter equipment could be used in some cases).
- *Pile Driving Requirements.* If pile driving is deemed necessary, the SFPUC shall incorporate into construction specifications for the project a requirement that the construction contractor(s) use all feasible means to avoid or reduce damage to potentially affected buildings. Such methods may include one or more of the following:
  - Incorporate non vibratory shoring methods and/or “quiet” pile-driving technologies into project construction (such as pre-drilled shafts drilled shafts, hydraulic pile driving methods, sonic pile drivers, auger cast-in-place, variable speed vibratory, micro-piling, or drilled displacement), as feasible; and/or as needed to meet established criteria.
  - Ensure appropriate excavation shoring methods to prevent the movement of adjacent structures.
- *Vibration Monitoring.* The plan shall identify the method and equipment for vibration monitoring to ensure that construction vibration levels do not exceed the established standards identified in the plan.
  - Should construction vibration levels be observed to meet or exceed the criteria established in the plan, the contractor(s) shall halt the vibration-generating construction activity causing the exceedance and put alternative construction techniques identified in the plan into practice.
  - If vibration has damaged nearby buildings and/or structures that are not historic, a qualified professional shall prepare a damage report documenting the features of the building and/or structure that has been damaged.
  - If vibration has damaged nearby buildings and/or structures that are historic, the historic preservation consultant shall immediately notify the ERO and prepare a damage report documenting the features of the building and/or structure that has been damaged.
- *Repair Damage.* The plan shall also identify provisions to be followed should damage to any building and/or structure occur due to construction-related vibration. The building(s) and/or structure(s) shall be remediated by SFPUC to their pre-construction condition (as allowed by property owners) at the conclusion of vibration-generating activity on the site and, for historical buildings, remediated in compliance with Secretary of the Interior’s Standards for the Treatment of Historic Properties, in consultation with the qualified historic preservation professional and planning department preservation staff.
- *Vibration Monitoring Results Report.* After construction is complete, SFPUC shall submit to the ERO or the ERO’s designee a final report documenting the monitoring records, building and/or structure condition summaries, descriptions of all instances of vibration level exceedance, identification of damage incurred due to vibration, and corrective actions taken to restore damaged buildings and structures.

### 4.3 Cumulative Impacts

#### *Construction Noise*

Cumulative construction-related noise increases would occur if any nearby projects are constructed at the same time as the proposed project and affect the same sensitive receptors as the proposed project for a substantial duration of time. Noise contributions from past and present projects within the project vicinity would be captured in the ambient noise levels for the proposed project. The geographic extent for the cumulative impact analysis for noise is limited to cumulative projects within 1,000 feet of the project sites because noise levels and vibration attenuate with distance and line of sight obstructions.

The St. Ignatius Academic Building Addition is located immediately adjacent the Sunset corridor variant pipeline alignment, but construction is underway and may be finished by 2026, before construction of the nearby project pipeline would begin. Similarly, the Caltrans repaving project on 19<sup>th</sup> Avenue is scheduled to be completed by 2027, and the southern portions of the repaving project, which could occur at the same time as construction of the initial phases of the proposed project, are more than 1,000 feet from the proposed project facilities. The construction of SFPUC projects at the Merced Manor Reservoir and Sunset Reservoir could potentially result in cumulative construction noise impacts either due to the intensity or duration of construction of multiple facilities at the same location. SFPUC would implement its Standard Construction Measure 5 (Noise) for all of its projects, which would ensure that cumulative noise impacts on nearby receptors would not result from the construction of its projects.

#### *Operational Noise*

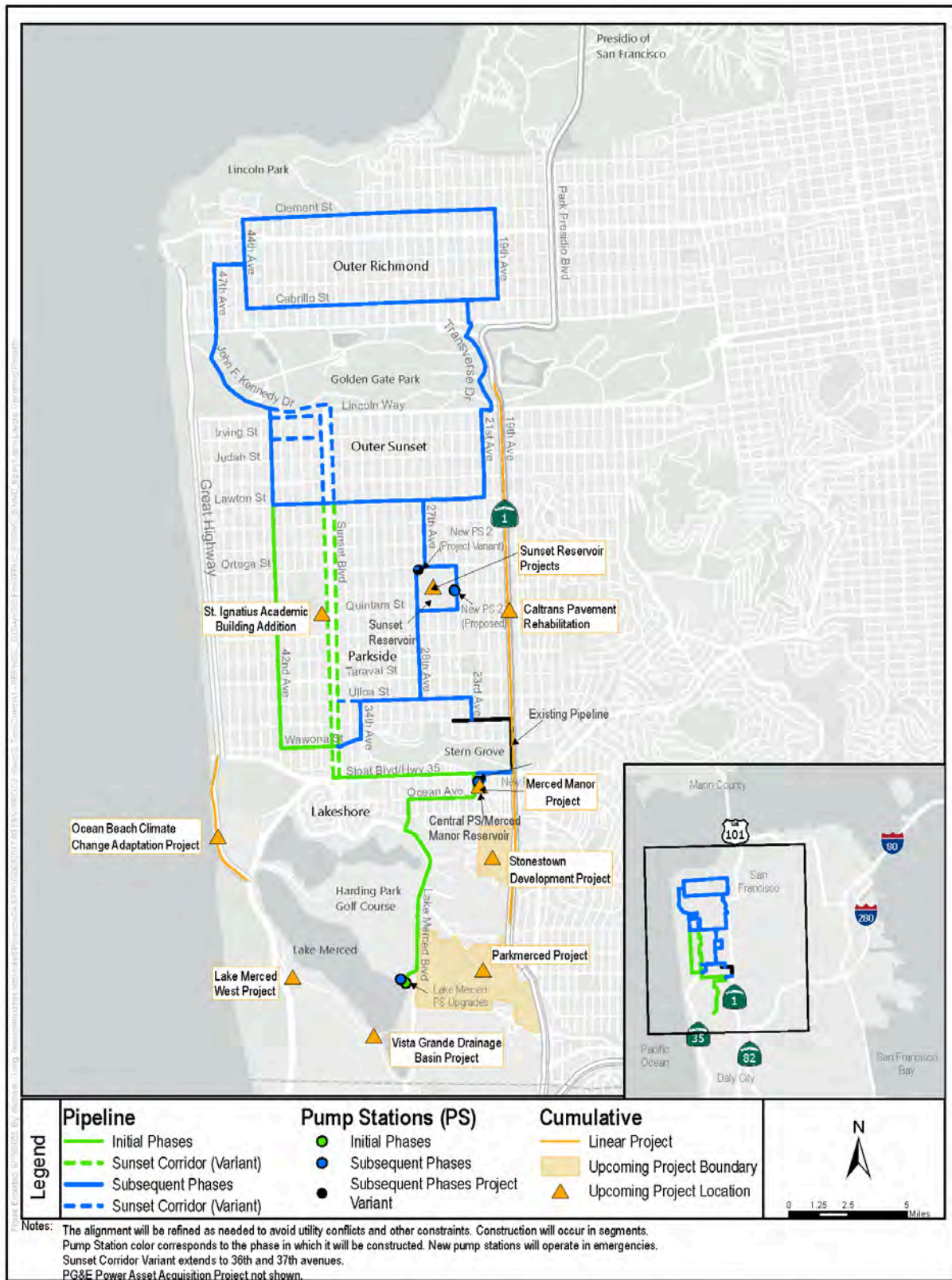
Operation of the project pipelines would not generate noise; however, operation of the existing Lake Merced Pumps Station and new emergency pump stations would generate limited noise. The emergency pump stations would be housed within buildings, therefore exterior noise due to their operation would be insignificant. Further, the diesel pumps would not generate substantial noise during operation. The three existing generators at the Lake Merced Pump Station may generate up to 88 dBA when being tested and addition of one generator would increase noise levels by about 1 dBA, which would not be noticeable. Emergency generators and diesel pumps would be operated infrequently and would thus not result in a significant contribution to cumulative noise in the project area. The primary operational noise impact associated with cumulative projects would be traffic noise associated with those projects, as none of the cumulative projects include notable sources of ongoing operational noise. Development projects such as the Parkmerced Project and Stonestown Development Project could potentially generate substantial traffic, therefore resulting in a significant contribution from traffic noise. However, the proposed project would not generate any additional traffic and would thus not contribute to cumulative traffic noise impacts. As a result, the contribution from operational noise of the current project combined with other projects in the vicinity would not result in cumulative noise impacts during operations.

#### *Vibration*

A cumulative vibration impact would occur when vibration from cumulative projects combines to exceed the applicable threshold at the same sensitive receptor. Because vibration attenuates rapidly with distance, cumulative projects would need to be under construction within very close proximity and at the same time as project construction for this to occur. The nearest cumulative project, the St. Ignatius Academic Building Addition would be located adjacent to a portion of the pipeline alignment, but construction would be complete before pipeline construction is expected to begin. None of the

other cumulative projects would be located close enough to the proposed project facilities to result in cumulative vibration impacts from construction. Because vibration impacts are highly localized and attenuate with distance, significant cumulative construction vibration impacts would not occur. The proposed project does not have the potential to result in cumulative vibration impacts from operation because the proposed project would not result in groundborne vibration.

Figure 3. Cumulative Projects



**Attachment A. Two Loudest Sources for Project Components Evaluated Quantitatively**

| Receptor Label | Receptor Address    | Construction Activity | Loudest Source-1        | Loudest Source-2 |
|----------------|---------------------|-----------------------|-------------------------|------------------|
| R1             | 19 Lake Merced Blvd | Soil Improvements     | Concrete/Industrial Saw | Concrete Mixer   |
| R2             | 701 Sloat Blvd      | Vaults                | Concrete/Industrial Saw | Paver            |
| R4             | 345 Sloat Blvd      | Open-Trench           | Concrete/Industrial Saw | Paver            |
| R8             | 1801 Taraval St     | Trenchless            | Concrete/Industrial Saw | Paver            |
| R9             | 3645 Judah St       | Trenchless            | Concrete/Industrial Saw | Paver            |

Note: Receptors R3, R5, R6, and R7 are not shown because noise impacts to those receptors were evaluated qualitatively.



**Attachment B. Two Loudest Sources for Project Components Evaluated Quantitatively  
(When Pile-driving is needed)**

| Receptor Label | Receptor Address | Construction Activity | Loudest Source-1    | Loudest Source-2        |
|----------------|------------------|-----------------------|---------------------|-------------------------|
| R2             | 701 Sloat Blvd   | Vaults                | Pile-driver (Sonic) | Concrete/Industrial Saw |
| R4             | 345 Sloat Blvd   | Open-Trench           | Pile-driver (Sonic) | Concrete/Industrial Saw |
| R8             | 1801 Taraval St  | Trenchless            | Pile-driver (Sonic) | Concrete/Industrial Saw |
| R9             | 3645 Judah St    | Trenchless            | Pile-driver (Sonic) | Concrete/Industrial Saw |

Note: Pile driving is not needed at receptor R1. Receptors R3, R5, R6, and R7 are not shown because noise impacts to those receptors were evaluated qualitatively.

**Attachment C. Noise Level at Sensitive Receptors Due to Construction Equipment with Representative noise reduction measures (Daytime)**

| Receptor Label | Receptor Address    | Construction Activity | Loudest Source [with noise reduction measures] | 2 <sup>nd</sup> Loudest Source [with noise reduction measures] | Distance to Property line, ft | Combined noise level at receptor, dBA | Example Reduction Measure-Sound Barrier with 15 dB reduction | Combined noise level at receptor, dBA | Impact: Amb+10 dBA | Impact: Daytime, 90 dBA |
|----------------|---------------------|-----------------------|------------------------------------------------|----------------------------------------------------------------|-------------------------------|---------------------------------------|--------------------------------------------------------------|---------------------------------------|--------------------|-------------------------|
| R1             | 19 Lake Merced Blvd | Soil Improvements     | Concrete Mixer                                 | Concrete Saw                                                   | 25                            | 88                                    | yes                                                          | 73                                    | No                 | No                      |
| R2             | 701 Sloat Blvd      | Vaults                | Paver                                          | Concrete Saw                                                   | 25                            | 81                                    | yes                                                          | 66                                    | No                 | No                      |
| R4             | 345 Sloat Blvd      | Open-Trench           | Paver                                          | Concrete Saw                                                   | 110                           | 68                                    | no                                                           | 68                                    | No                 | No                      |
| R8             | 1801 Taraval St     | Trenchless            | Paver                                          | Concrete Saw                                                   | 26                            | 80                                    | yes                                                          | 65                                    | No                 | No                      |
| R9             | 3645 Judah St       | Trenchless            | Paver                                          | Concrete Saw                                                   | 25                            | 81                                    | yes                                                          | 66                                    | No                 | No                      |

### Attachment D. Noise Level at Sensitive Receptors Due to Construction Equipment with Representative noise reduction measures (Nighttime)

| Receptor Label | Receptor Address | Construction Activity | Loudest Source [with noise reduction measures] | 2 <sup>nd</sup> Loudest Source [with noise reduction measures] | Distance to Property line, ft | Combined noise level at receptor, dBA | Example Reduction Measure - Sound Barrier with 15 dB reduction | Combined noise level at receptor, dBA | Impact: Amb+5 dBA [Limit=67] | Impact: Nighttime, 60 dBA |
|----------------|------------------|-----------------------|------------------------------------------------|----------------------------------------------------------------|-------------------------------|---------------------------------------|----------------------------------------------------------------|---------------------------------------|------------------------------|---------------------------|
| R9             | 3645 Judah St    | Trenchless [Mining]   | Crane                                          | Generator                                                      | 20                            | 78                                    | yes                                                            | 63                                    | No                           | Yes                       |
| R9             | 3645 Judah St    | Trenchless [Mining]   | Dump Truck                                     | Crane                                                          | 20                            | 81                                    | yes                                                            | 66                                    | No                           | Yes                       |
| R9             | 3645 Judah St    | Trenchless [Welding]  | Welder/Torch                                   | Welder/Torch                                                   | 20                            | 84                                    | no                                                             | 69                                    | Yes                          | Yes                       |
| R9             | 3645 Judah St    | Trenchless [Welding]  | Welder/Torch                                   | Man Lift                                                       | 20                            | 82                                    | yes                                                            | 67                                    | Yes                          | Yes                       |

Note: R9 represents the closest residential receptor adjacent to potential trenchless work with nighttime activities.

**Attachment E. Vibration Level at Sensitive Receptors Due to Construction  
Equipment with vibration reduction measures (Nighttime)**

| <b>Sensitive<br/>Receptor<br/>ID</b> | <b>Receptor<br/>Address</b>  | <b>Distance<br/>to<br/>Receptor</b> | <b>Construction<br/>Activity</b> | <b>Primary<br/>Vibratory<br/>Equipment</b> | <b>Reference<br/>Level at<br/>25 Feet, Lv<br/>(VdB)<br/>With<br/>reduction<br/>measures</b> | <b>Calculated<br/>Level at<br/>Receptor,<br/>Lv (VdB)</b> | <b>Sleep<br/>Disturbance<br/>Limit<sup>1</sup>, Lv<br/>(VdB)</b> | <b>Exceeds<br/>Limit?</b> |
|--------------------------------------|------------------------------|-------------------------------------|----------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------|---------------------------|
| R9                                   | 3645 Judah St<br>(residence) | 15                                  | Trenchless<br>(Night)            | Auger Drill<br>Rig                         | 65                                                                                          | 72                                                        | 72                                                               | No                        |

Notes:

Sleep disturbance analysis is warranted if nighttime work is planned in the vicinity of sensitive receptors that house people sleeping at night. Therefore, other sensitive receptors (like schools) are omitted from this table.

in/s = inches per second

PPV = peak particle velocity

# **APPENDIX D**

## **AIR QUALITY MODEL RESULTS**

Annual Project Construction Emissions

| Construction Year                            | Pollutant Emissions (Annual Tons per Year) |      |                          |                           |
|----------------------------------------------|--------------------------------------------|------|--------------------------|---------------------------|
|                                              | ROG                                        | NOx  | Exhaust PM <sub>10</sub> | Exhaust PM <sub>2.5</sub> |
| 2026                                         | 0.61                                       | 6.04 | 0.19                     | 0.17                      |
| 2027                                         | 0.52                                       | 5.16 | 0.15                     | 0.14                      |
| 2028                                         | 0.68                                       | 6.46 | 0.18                     | 0.17                      |
| 2029                                         | 0.51                                       | 4.67 | 0.12                     | 0.11                      |
| 2030                                         | 0.39                                       | 3.50 | 0.08                     | 0.08                      |
| 2031                                         | 0.41                                       | 3.73 | 0.09                     | 0.08                      |
| 2032                                         | 0.20                                       | 1.90 | 0.04                     | 0.04                      |
| 2033                                         | 0.20                                       | 1.86 | 0.04                     | 0.04                      |
| 2034                                         | 0.19                                       | 1.83 | 0.04                     | 0.03                      |
| 2035                                         | 0.19                                       | 1.79 | 0.03                     | 0.03                      |
| 2036                                         | 0.18                                       | 1.76 | 0.03                     | 0.03                      |
| 2037                                         | 0.18                                       | 1.72 | 0.03                     | 0.02                      |
| 2038                                         | 0.22                                       | 2.03 | 0.03                     | 0.03                      |
| 2039                                         | 0.37                                       | 3.41 | 0.05                     | 0.04                      |
| 2040                                         | 0.34                                       | 3.16 | 0.05                     | 0.04                      |
| Bay Area Air District Significance Threshold | 54                                         | 54   | 82                       | 54                        |

Conversion assumptions

|                       |      |
|-----------------------|------|
| pounds per ton        | 2000 |
| working days per year | 260  |

Average Daily Project Construction Emissions

| Construction Year                            | Pollutant Emissions (Average Pounds per Day) |       |                          |                           |
|----------------------------------------------|----------------------------------------------|-------|--------------------------|---------------------------|
|                                              | ROG                                          | NOx   | Exhaust PM <sub>10</sub> | Exhaust PM <sub>2.5</sub> |
| 2026                                         | 4.69                                         | 46.46 | 1.46                     | 1.31                      |
| 2027                                         | 4.00                                         | 39.69 | 1.15                     | 1.08                      |
| 2028                                         | 5.23                                         | 49.69 | 1.38                     | 1.31                      |
| 2029                                         | 3.92                                         | 35.92 | 0.92                     | 0.85                      |
| 2030                                         | 3.00                                         | 26.92 | 0.62                     | 0.62                      |
| 2031                                         | 3.15                                         | 28.69 | 0.69                     | 0.62                      |
| 2032                                         | 1.54                                         | 14.62 | 0.31                     | 0.31                      |
| 2033                                         | 1.54                                         | 14.31 | 0.31                     | 0.31                      |
| 2034                                         | 1.46                                         | 14.08 | 0.31                     | 0.23                      |
| 2035                                         | 1.46                                         | 13.77 | 0.23                     | 0.23                      |
| 2036                                         | 1.38                                         | 13.54 | 0.23                     | 0.23                      |
| 2037                                         | 1.38                                         | 13.23 | 0.23                     | 0.15                      |
| 2038                                         | 1.69                                         | 15.62 | 0.23                     | 0.23                      |
| 2039                                         | 2.85                                         | 26.23 | 0.38                     | 0.31                      |
| 2040                                         | 2.62                                         | 24.31 | 0.38                     | 0.31                      |
| Bay Area Air District Significance Threshold | 54                                           | 54    | 82                       | 54                        |

Net Operational Criteria Pollutant Emissions (pounds per day)

| Emission Source                 | ROG     | NOx     | PM <sub>10</sub> Total | PM <sub>2.5</sub> Total |
|---------------------------------|---------|---------|------------------------|-------------------------|
| LMPS Generator                  | 0.22    | 1.00    | 0.03                   | 0.03                    |
| Pumps                           | 0.12    | 1.28    | 0.02                   | 0.02                    |
| O&M Trips                       | < 0.005 | < 0.005 | 0.01                   | < 0.005                 |
| Total                           | 0.34    | 2.28    | 0.06                   | 0.05                    |
| Bay Area Air District Threshold | 54      | 54      | 82                     | 54                      |

Net Operational Criteria Pollutant Emissions (tons per year)

| Emission Source                 | ROG     | NOx     | PM <sub>10</sub> Total | PM <sub>2.5</sub> Total |
|---------------------------------|---------|---------|------------------------|-------------------------|
| LMPS Generator                  | 0.04    | 0.18    | 0.006                  | 0.006                   |
| Pumps                           | 0.02    | 0.23    | < 0.005                | < 0.005                 |
| O&M Trips                       | < 0.005 | < 0.005 | < 0.005                | < 0.005                 |
| Total                           | 0.06    | 0.41    | 0.006                  | 0.006                   |
| Bay Area Air District Threshold | 10      | 10      | 15                     | 10                      |



## PEFWS LMPS Emergency Generator Emissions

Lake Merced Pump Station Emergency Generator (2.5 MW = 3,300 hp)

exercised once per month for about 15 minutes without load and exercised twice annually with full load for about for about 4 hours

|             |                 |                  |
|-------------|-----------------|------------------|
| Fuel Type   | diesel          |                  |
| #/day       | 1               |                  |
| hours/day   | 0.03            | =(0.25*12+8)/365 |
| hours/year  | 11              | =0.25*12+8       |
| Horsepower  | (750 - 9999 HP) |                  |
| load factor | 0.73            |                  |

| Emergency Generator Emission Factors                                          |        |  | Conversion assumptions |            | Emissions   |             |          |              |               |           |           |
|-------------------------------------------------------------------------------|--------|--|------------------------|------------|-------------|-------------|----------|--------------|---------------|-----------|-----------|
| Source: CalEEMod Guidebook                                                    |        |  |                        |            |             |             |          |              |               |           |           |
| <a href="https://caleemod.com/user-guide">https://caleemod.com/user-guide</a> |        |  |                        |            |             |             |          |              |               |           |           |
| Appendix G, Page G-40                                                         |        |  | lb/gram                | 0.00220462 |             |             |          |              |               |           |           |
| UNIT of Emission Factor g/bhp-hr.                                             |        |  | lbs/ton                | 2000       | lbs/bhp-hr. | lbs/day-bhp | lbs/day  | tons/bhp-hr. | tons/year-bhp | tons/year |           |
| TOG                                                                           | 1.12   |  | bhp                    | 3300       | TOG         | 0.002469174 | 0.000074 | 0.245564     | 0.000001      | 0.000014  | 0.044816  |
| ROG                                                                           | 1.02   |  |                        |            | ROG         | 0.002248712 | 0.000068 | 0.223639     | 0.000001      | 0.000012  | 0.040814  |
| CO                                                                            | 2.6    |  |                        |            | CO          | 0.005732012 | 0.000173 | 0.570060     | 0.000003      | 0.000032  | 0.104036  |
| NOx                                                                           | 4.56   |  |                        |            | NOx         | 0.010053067 | 0.000303 | 0.999798     | 0.000005      | 0.000055  | 0.182463  |
| SO2                                                                           | 0.005  |  |                        |            | SO2         | 1.10231E-05 | 0.000000 | 0.001096     | 0.000000      | 0.000000  | 0.000200  |
| PM10                                                                          | 0.15   |  |                        |            | PM10        | 0.000330693 | 0.000010 | 0.032888     | 0.000000      | 0.000002  | 0.006002  |
| PM2.5                                                                         | 0.15   |  |                        |            | PM2.5       | 0.000330693 | 0.000010 | 0.032888     | 0.000000      | 0.000002  | 0.006002  |
| CO2                                                                           | 521.64 |  |                        |            | CO2         | 1.150017977 | 0.034658 | 114.371651   | 0.000575      | 0.006325  | 20.872826 |
| CH4                                                                           | 0.021  |  |                        |            | CH4         | 4.6297E-05  | 0.000001 | 0.004604     | 0.000000      | 0.000000  | 0.000840  |
| N2O                                                                           | 0.004  |  |                        |            | N2O         | 8.81848E-06 | 0.000000 | 0.000877     | 0.000000      | 0.000000  | 0.000160  |

# PEFWS Detailed Report

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# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field                  | Value                                   |
|-----------------------------|-----------------------------------------|
| Project Name                | PEFWS                                   |
| Construction Start Date     | 1/1/2026                                |
| Operational Year            | 2030                                    |
| Lead Agency                 | —                                       |
| Land Use Scale              | Project/site                            |
| Analysis Level for Defaults | County                                  |
| Windspeed (m/s)             | 4.60                                    |
| Precipitation (days)        | 18.8                                    |
| Location                    | 37.75453410013928, -122.494490444480822 |
| County                      | San Francisco                           |
| City                        | San Francisco                           |
| Air District                | Bay Area AQMD                           |
| Air Basin                   | San Francisco Bay Area                  |
| TAZ                         | 1126                                    |
| EDFZ                        | 1                                       |
| Electric Utility            | Pacific Gas & Electric Company          |
| Gas Utility                 | Pacific Gas & Electric                  |
| App Version                 | 2022.1.1.29                             |

## 1.2. Land Use Types

| Land Use Subtype       | Size | Unit | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|------------------------|------|------|-------------|-----------------------|------------------------|--------------------------------|------------|-------------|
| Other Asphalt Surfaces | 38.8 | Acre | 38.8        | 0.00                  | 0.00                   | 0.00                           | —          | —           |

|                                |      |          |      |        |      |      |   |   |
|--------------------------------|------|----------|------|--------|------|------|---|---|
| Refrigerated Warehouse-No Rail | 19.1 | 1000sqft | 0.44 | 19,050 | 0.00 | 0.00 | — | — |
|--------------------------------|------|----------|------|--------|------|------|---|---|

1.3. User-Selected Emission Reduction Measures by Emissions Sector

| Sector       | #   | Measure Title             |
|--------------|-----|---------------------------|
| Construction | C-5 | Use Advanced Engine Tiers |

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit.             | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2  | CO2T   | CH4  | N2O  | R    | CO2e   |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|------|------|------|--------|
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —    | —      |
| Unmit.              | 8.09 | 5.88 | 56.0 | 76.2 | 0.15 | 1.58  | 5.48  | 7.07  | 1.46   | 0.93   | 2.39   | —    | 17,794 | 17,794 | 1.56 | 0.99 | 11.6 | 18,139 |
| Mit.                | 3.46 | 2.20 | 30.3 | 83.6 | 0.15 | 0.42  | 5.48  | 5.90  | 0.40   | 0.93   | 1.33   | —    | 17,794 | 17,794 | 1.56 | 0.99 | 11.6 | 18,139 |
| % Reduced           | 57%  | 63%  | 46%  | -10% | —    | 74%   | —     | 17%   | 72%    | —      | 44%    | —    | —      | —      | —    | —    | —    | —      |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —    | —      |
| Unmit.              | 8.79 | 5.95 | 61.6 | 75.9 | 0.19 | 1.80  | 6.66  | 8.45  | 1.66   | 1.13   | 2.79   | —    | 19,037 | 19,037 | 2.12 | 1.42 | 0.46 | 19,513 |
| Mit.                | 4.18 | 2.27 | 36.1 | 83.3 | 0.19 | 0.46  | 6.66  | 7.12  | 0.45   | 1.13   | 1.57   | —    | 19,037 | 19,037 | 2.12 | 1.42 | 0.46 | 19,513 |
| % Reduced           | 52%  | 62%  | 41%  | -10% | —    | 74%   | —     | 16%   | 73%    | —      | 43%    | —    | —      | —      | —    | —    | —    | —      |
| Average Daily (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —    | —      |
| Unmit.              | 5.09 | 3.73 | 35.4 | 48.2 | 0.10 | 1.02  | 3.49  | 4.51  | 0.94   | 0.57   | 1.51   | —    | 10,941 | 10,941 | 1.00 | 0.64 | 3.50 | 11,146 |
| Mit.                | 2.11 | 1.36 | 19.5 | 52.2 | 0.10 | 0.25  | 3.49  | 3.73  | 0.24   | 0.57   | 0.80   | —    | 10,941 | 10,941 | 1.00 | 0.64 | 3.50 | 11,146 |

|              |      |      |      |      |      |      |      |      |      |      |      |   |       |       |      |      |      |       |
|--------------|------|------|------|------|------|------|------|------|------|------|------|---|-------|-------|------|------|------|-------|
| % Reduced    | 58%  | 63%  | 45%  | -8%  | —    | 76%  | —    | 17%  | 74%  | —    | 47%  | — | —     | —     | —    | —    | —    | —     |
| Annual (Max) | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —    | —    | —     |
| Unmit.       | 0.93 | 0.68 | 6.46 | 8.79 | 0.02 | 0.19 | 0.64 | 0.82 | 0.17 | 0.10 | 0.28 | — | 1,811 | 1,811 | 0.17 | 0.11 | 0.58 | 1,845 |
| Mit.         | 0.39 | 0.25 | 3.55 | 9.52 | 0.02 | 0.05 | 0.64 | 0.68 | 0.04 | 0.10 | 0.15 | — | 1,811 | 1,811 | 0.17 | 0.11 | 0.58 | 1,845 |
| % Reduced    | 58%  | 63%  | 45%  | -8%  | —    | 76%  | —    | 17%  | 74%  | —    | 47%  | — | —     | —     | —    | —    | —    | —     |

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Year                 | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2  | CO2T   | CH4  | N2O  | R    | CO2e   |
|----------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|--------|--------|------|------|------|--------|
| Daily - Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —      | —      | —    | —    | —    | —      |
| 2026                 | 6.74 | 4.82 | 46.5 | 58.0 | 0.14 | 1.45  | 5.07  | 6.52  | 1.34   | 0.82   | 2.15   | —    | 14,200 | 14,200 | 1.37 | 0.85 | 11.4 | 14,500 |
| 2027                 | 6.01 | 4.28 | 41.9 | 53.6 | 0.11 | 1.25  | 4.87  | 6.13  | 1.16   | 0.77   | 1.93   | —    | 13,373 | 13,373 | 1.29 | 0.81 | 9.70 | 13,655 |
| 2028                 | 8.09 | 5.88 | 56.0 | 76.2 | 0.15 | 1.58  | 5.48  | 7.07  | 1.46   | 0.93   | 2.39   | —    | 17,794 | 17,794 | 1.56 | 0.99 | 11.6 | 18,139 |
| 2029                 | 5.58 | 4.18 | 38.1 | 55.3 | 0.10 | 1.02  | 3.47  | 4.48  | 0.94   | 0.61   | 1.54   | —    | 11,744 | 11,744 | 0.93 | 0.60 | 6.98 | 11,952 |
| 2030                 | 4.33 | 3.50 | 31.0 | 46.7 | 0.07 | 0.70  | 2.17  | 2.88  | 0.65   | 0.48   | 1.12   | —    | 9,238  | 9,238  | 0.49 | 0.25 | 5.20 | 9,331  |
| 2031                 | 4.19 | 3.40 | 30.3 | 46.3 | 0.07 | 0.66  | 2.17  | 2.83  | 0.60   | 0.48   | 1.08   | —    | 9,180  | 9,180  | 0.47 | 0.25 | 4.60 | 9,270  |
| 2032                 | 1.98 | 1.54 | 14.5 | 22.3 | 0.04 | 0.32  | 0.61  | 0.93  | 0.30   | 0.16   | 0.45   | —    | 4,412  | 4,412  | 0.28 | 0.18 | 1.76 | 4,474  |
| 2033                 | 1.91 | 1.50 | 14.2 | 22.2 | 0.04 | 0.29  | 0.61  | 0.90  | 0.27   | 0.16   | 0.43   | —    | 4,372  | 4,372  | 0.27 | 0.17 | 1.53 | 4,432  |
| 2034                 | 1.86 | 1.46 | 14.0 | 22.1 | 0.04 | 0.27  | 0.60  | 0.88  | 0.25   | 0.16   | 0.41   | —    | 4,334  | 4,334  | 0.26 | 0.17 | 1.33 | 4,394  |
| 2035                 | 1.81 | 1.43 | 13.7 | 21.9 | 0.04 | 0.25  | 0.60  | 0.85  | 0.22   | 0.16   | 0.38   | —    | 4,298  | 4,298  | 0.24 | 0.17 | 1.14 | 4,355  |
| 2036                 | 1.78 | 1.41 | 13.4 | 21.8 | 0.04 | 0.22  | 0.60  | 0.83  | 0.21   | 0.16   | 0.36   | —    | 4,265  | 4,265  | 0.24 | 0.16 | 0.97 | 4,320  |
| 2037                 | 1.74 | 1.39 | 13.2 | 21.6 | 0.04 | 0.20  | 0.60  | 0.81  | 0.19   | 0.16   | 0.34   | —    | 4,235  | 4,235  | 0.22 | 0.15 | 0.83 | 4,287  |
| 2038                 | 2.62 | 2.11 | 19.8 | 34.5 | 0.06 | 0.30  | 0.92  | 1.22  | 0.28   | 0.23   | 0.50   | —    | 6,875  | 6,875  | 0.33 | 0.20 | 0.99 | 6,946  |
| 2039                 | 3.56 | 2.94 | 27.0 | 43.9 | 0.07 | 0.37  | 2.17  | 2.54  | 0.34   | 0.47   | 0.81   | —    | 8,785  | 8,785  | 0.37 | 0.20 | 1.35 | 8,855  |
| 2040                 | 3.53 | 2.88 | 26.8 | 43.8 | 0.07 | 0.36  | 2.17  | 2.53  | 0.33   | 0.47   | 0.80   | —    | 8,753  | 8,753  | 0.36 | 0.19 | 1.14 | 8,820  |

|                      |      |      |      |      |      |      |      |      |      |      |      |   |        |        |      |      |      |        |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|---|--------|--------|------|------|------|--------|
| Daily - Winter (Max) | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | — | —      | —      | —    | —    | —    | —      |
| 2026                 | 8.79 | 5.95 | 61.6 | 73.4 | 0.19 | 1.80 | 6.66 | 8.45 | 1.66 | 1.13 | 2.79 | — | 19,037 | 19,037 | 2.12 | 1.42 | 0.46 | 19,513 |
| 2027                 | 6.01 | 4.28 | 42.3 | 53.4 | 0.11 | 1.25 | 4.87 | 6.13 | 1.16 | 0.77 | 1.93 | — | 13,338 | 13,338 | 1.29 | 0.83 | 0.25 | 13,617 |
| 2028                 | 8.08 | 5.87 | 56.5 | 75.9 | 0.15 | 1.58 | 5.48 | 7.07 | 1.46 | 0.93 | 2.39 | — | 17,742 | 17,742 | 1.56 | 1.02 | 0.30 | 18,084 |
| 2029                 | 5.57 | 4.17 | 38.4 | 55.1 | 0.10 | 1.02 | 3.47 | 4.48 | 0.94 | 0.61 | 1.54 | — | 11,702 | 11,702 | 0.93 | 0.62 | 0.18 | 11,911 |
| 2030                 | 4.33 | 3.50 | 31.1 | 46.2 | 0.07 | 0.70 | 2.17 | 2.88 | 0.65 | 0.48 | 1.12 | — | 9,157  | 9,157  | 0.50 | 0.25 | 0.14 | 9,245  |
| 2031                 | 4.18 | 3.39 | 30.5 | 45.9 | 0.07 | 0.66 | 2.17 | 2.83 | 0.60 | 0.48 | 1.08 | — | 9,101  | 9,101  | 0.48 | 0.25 | 0.12 | 9,186  |
| 2032                 | 1.98 | 1.54 | 14.5 | 22.2 | 0.04 | 0.32 | 0.61 | 0.93 | 0.30 | 0.16 | 0.45 | — | 4,394  | 4,394  | 0.28 | 0.18 | 0.05 | 4,455  |
| 2033                 | 1.91 | 1.50 | 14.3 | 22.1 | 0.04 | 0.29 | 0.61 | 0.90 | 0.27 | 0.16 | 0.43 | — | 4,355  | 4,355  | 0.27 | 0.17 | 0.04 | 4,414  |
| 2034                 | 1.86 | 1.46 | 14.0 | 22.0 | 0.04 | 0.27 | 0.60 | 0.88 | 0.25 | 0.16 | 0.41 | — | 4,317  | 4,317  | 0.26 | 0.17 | 0.03 | 4,375  |
| 2035                 | 1.81 | 1.43 | 13.8 | 21.8 | 0.04 | 0.25 | 0.60 | 0.85 | 0.22 | 0.16 | 0.38 | — | 4,281  | 4,281  | 0.24 | 0.17 | 0.03 | 4,337  |
| 2036                 | 1.78 | 1.41 | 13.5 | 21.7 | 0.04 | 0.22 | 0.60 | 0.83 | 0.21 | 0.16 | 0.36 | — | 4,248  | 4,248  | 0.24 | 0.16 | 0.03 | 4,303  |
| 2037                 | 1.74 | 1.39 | 13.2 | 21.5 | 0.04 | 0.20 | 0.60 | 0.81 | 0.19 | 0.16 | 0.34 | — | 4,218  | 4,218  | 0.23 | 0.16 | 0.02 | 4,270  |
| 2038                 | 2.32 | 1.87 | 17.3 | 30.6 | 0.05 | 0.28 | 1.02 | 1.30 | 0.26 | 0.24 | 0.50 | — | 5,858  | 5,858  | 0.29 | 0.20 | 0.03 | 5,924  |
| 2039                 | 3.57 | 2.91 | 27.1 | 43.5 | 0.07 | 0.37 | 2.17 | 2.54 | 0.34 | 0.47 | 0.81 | — | 8,711  | 8,711  | 0.37 | 0.20 | 0.03 | 8,781  |
| 2040                 | 3.52 | 2.87 | 26.9 | 43.4 | 0.07 | 0.36 | 2.17 | 2.53 | 0.33 | 0.47 | 0.80 | — | 8,680  | 8,680  | 0.37 | 0.20 | 0.03 | 8,748  |
| Average Daily        | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | — | —      | —      | —    | —    | —    | —      |
| 2026                 | 4.72 | 3.34 | 33.1 | 40.3 | 0.10 | 1.02 | 3.49 | 4.51 | 0.94 | 0.57 | 1.51 | — | 10,063 | 10,063 | 1.00 | 0.64 | 3.50 | 10,282 |
| 2027                 | 4.04 | 2.84 | 28.3 | 35.4 | 0.07 | 0.83 | 3.32 | 4.15 | 0.76 | 0.53 | 1.29 | — | 9,006  | 9,006  | 0.90 | 0.58 | 2.93 | 9,206  |
| 2028                 | 5.09 | 3.73 | 35.4 | 48.2 | 0.09 | 0.99 | 3.22 | 4.21 | 0.91 | 0.55 | 1.47 | — | 10,941 | 10,941 | 0.95 | 0.60 | 3.09 | 11,146 |
| 2029                 | 3.74 | 2.78 | 25.6 | 36.6 | 0.06 | 0.66 | 2.36 | 3.03 | 0.61 | 0.41 | 1.03 | — | 7,839  | 7,839  | 0.65 | 0.42 | 2.12 | 7,983  |
| 2030                 | 2.68 | 2.14 | 19.2 | 28.9 | 0.05 | 0.46 | 1.17 | 1.63 | 0.42 | 0.26 | 0.69 | — | 5,725  | 5,725  | 0.33 | 0.18 | 1.33 | 5,787  |
| 2031                 | 2.82 | 2.27 | 20.4 | 31.0 | 0.05 | 0.47 | 1.31 | 1.77 | 0.43 | 0.29 | 0.72 | — | 6,165  | 6,165  | 0.33 | 0.17 | 1.28 | 6,226  |
| 2032                 | 1.42 | 1.10 | 10.4 | 15.9 | 0.03 | 0.23 | 0.43 | 0.66 | 0.21 | 0.11 | 0.32 | — | 3,148  | 3,148  | 0.20 | 0.13 | 0.54 | 3,192  |
| 2033                 | 1.37 | 1.07 | 10.2 | 15.8 | 0.03 | 0.21 | 0.43 | 0.64 | 0.19 | 0.11 | 0.30 | — | 3,112  | 3,112  | 0.19 | 0.12 | 0.47 | 3,154  |
| 2034                 | 1.33 | 1.04 | 10.0 | 15.7 | 0.03 | 0.20 | 0.43 | 0.62 | 0.18 | 0.11 | 0.29 | — | 3,084  | 3,084  | 0.18 | 0.12 | 0.41 | 3,127  |



|        |      |      |      |      |         |      |      |      |      |      |      |   |       |       |      |      |      |       |
|--------|------|------|------|------|---------|------|------|------|------|------|------|---|-------|-------|------|------|------|-------|
| 2035   | 1.29 | 1.02 | 9.83 | 15.6 | 0.03    | 0.18 | 0.43 | 0.60 | 0.16 | 0.11 | 0.27 | — | 3,059 | 3,059 | 0.17 | 0.12 | 0.35 | 3,099 |
| 2036   | 1.27 | 1.01 | 9.65 | 15.5 | 0.03    | 0.16 | 0.43 | 0.59 | 0.15 | 0.11 | 0.26 | — | 3,044 | 3,044 | 0.17 | 0.12 | 0.30 | 3,083 |
| 2037   | 1.24 | 0.99 | 9.45 | 15.4 | 0.03    | 0.15 | 0.43 | 0.57 | 0.13 | 0.11 | 0.24 | — | 3,014 | 3,014 | 0.16 | 0.11 | 0.26 | 3,051 |
| 2038   | 1.48 | 1.18 | 11.1 | 19.0 | 0.03    | 0.17 | 0.54 | 0.71 | 0.16 | 0.13 | 0.29 | — | 3,697 | 3,697 | 0.19 | 0.13 | 0.26 | 3,739 |
| 2039   | 2.47 | 2.01 | 18.7 | 30.3 | 0.05    | 0.26 | 1.45 | 1.71 | 0.24 | 0.32 | 0.55 | — | 6,049 | 6,049 | 0.26 | 0.14 | 0.40 | 6,099 |
| 2040   | 2.30 | 1.87 | 17.3 | 28.8 | 0.05    | 0.25 | 1.22 | 1.48 | 0.23 | 0.27 | 0.50 | — | 5,765 | 5,765 | 0.25 | 0.14 | 0.30 | 5,812 |
| Annual | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —    | —    | —    | —     |
| 2026   | 0.86 | 0.61 | 6.04 | 7.36 | 0.02    | 0.19 | 0.64 | 0.82 | 0.17 | 0.10 | 0.28 | — | 1,666 | 1,666 | 0.17 | 0.11 | 0.58 | 1,702 |
| 2027   | 0.74 | 0.52 | 5.16 | 6.46 | 0.01    | 0.15 | 0.61 | 0.76 | 0.14 | 0.10 | 0.24 | — | 1,491 | 1,491 | 0.15 | 0.10 | 0.49 | 1,524 |
| 2028   | 0.93 | 0.68 | 6.46 | 8.79 | 0.02    | 0.18 | 0.59 | 0.77 | 0.17 | 0.10 | 0.27 | — | 1,811 | 1,811 | 0.16 | 0.10 | 0.51 | 1,845 |
| 2029   | 0.68 | 0.51 | 4.67 | 6.68 | 0.01    | 0.12 | 0.43 | 0.55 | 0.11 | 0.08 | 0.19 | — | 1,298 | 1,298 | 0.11 | 0.07 | 0.35 | 1,322 |
| 2030   | 0.49 | 0.39 | 3.50 | 5.28 | 0.01    | 0.08 | 0.21 | 0.30 | 0.08 | 0.05 | 0.13 | — | 948   | 948   | 0.05 | 0.03 | 0.22 | 958   |
| 2031   | 0.51 | 0.41 | 3.73 | 5.65 | 0.01    | 0.09 | 0.24 | 0.32 | 0.08 | 0.05 | 0.13 | — | 1,021 | 1,021 | 0.05 | 0.03 | 0.21 | 1,031 |
| 2032   | 0.26 | 0.20 | 1.90 | 2.90 | < 0.005 | 0.04 | 0.08 | 0.12 | 0.04 | 0.02 | 0.06 | — | 521   | 521   | 0.03 | 0.02 | 0.09 | 529   |
| 2033   | 0.25 | 0.20 | 1.86 | 2.88 | < 0.005 | 0.04 | 0.08 | 0.12 | 0.04 | 0.02 | 0.06 | — | 515   | 515   | 0.03 | 0.02 | 0.08 | 522   |
| 2034   | 0.24 | 0.19 | 1.83 | 2.86 | < 0.005 | 0.04 | 0.08 | 0.11 | 0.03 | 0.02 | 0.05 | — | 511   | 511   | 0.03 | 0.02 | 0.07 | 518   |
| 2035   | 0.24 | 0.19 | 1.79 | 2.84 | < 0.005 | 0.03 | 0.08 | 0.11 | 0.03 | 0.02 | 0.05 | — | 506   | 506   | 0.03 | 0.02 | 0.06 | 513   |
| 2036   | 0.23 | 0.18 | 1.76 | 2.83 | < 0.005 | 0.03 | 0.08 | 0.11 | 0.03 | 0.02 | 0.05 | — | 504   | 504   | 0.03 | 0.02 | 0.05 | 510   |
| 2037   | 0.23 | 0.18 | 1.72 | 2.81 | < 0.005 | 0.03 | 0.08 | 0.10 | 0.02 | 0.02 | 0.04 | — | 499   | 499   | 0.03 | 0.02 | 0.04 | 505   |
| 2038   | 0.27 | 0.22 | 2.03 | 3.47 | 0.01    | 0.03 | 0.10 | 0.13 | 0.03 | 0.02 | 0.05 | — | 612   | 612   | 0.03 | 0.02 | 0.04 | 619   |
| 2039   | 0.45 | 0.37 | 3.41 | 5.52 | 0.01    | 0.05 | 0.26 | 0.31 | 0.04 | 0.06 | 0.10 | — | 1,002 | 1,002 | 0.04 | 0.02 | 0.07 | 1,010 |
| 2040   | 0.42 | 0.34 | 3.16 | 5.26 | 0.01    | 0.05 | 0.22 | 0.27 | 0.04 | 0.05 | 0.09 | — | 954   | 954   | 0.04 | 0.02 | 0.05 | 962   |

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Year                 | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily - Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                      |      |      |      |      |      |      |      |      |      |      |      |   |        |        |      |      |      |        |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|---|--------|--------|------|------|------|--------|
| 2026                 | 2.94 | 1.78 | 24.4 | 63.9 | 0.14 | 0.34 | 5.07 | 5.40 | 0.33 | 0.82 | 1.14 | — | 14,200 | 14,200 | 1.37 | 0.85 | 11.4 | 14,500 |
| 2027                 | 2.72 | 1.66 | 21.7 | 60.1 | 0.11 | 0.32 | 4.87 | 5.20 | 0.31 | 0.77 | 1.08 | — | 13,373 | 13,373 | 1.29 | 0.81 | 9.70 | 13,655 |
| 2028                 | 3.46 | 2.20 | 30.3 | 83.6 | 0.15 | 0.42 | 5.48 | 5.90 | 0.40 | 0.93 | 1.33 | — | 17,794 | 17,794 | 1.56 | 0.99 | 11.6 | 18,139 |
| 2029                 | 2.21 | 1.50 | 21.6 | 58.4 | 0.10 | 0.25 | 3.47 | 3.72 | 0.24 | 0.61 | 0.85 | — | 11,744 | 11,744 | 0.93 | 0.60 | 6.98 | 11,952 |
| 2030                 | 1.77 | 1.49 | 19.9 | 50.2 | 0.07 | 0.21 | 2.17 | 2.39 | 0.21 | 0.48 | 0.68 | — | 9,238  | 9,238  | 0.49 | 0.25 | 5.20 | 9,331  |
| 2031                 | 1.73 | 1.47 | 19.8 | 49.9 | 0.07 | 0.21 | 2.17 | 2.39 | 0.20 | 0.48 | 0.68 | — | 9,180  | 9,180  | 0.47 | 0.25 | 4.60 | 9,270  |
| 2032                 | 0.73 | 0.55 | 8.69 | 23.4 | 0.04 | 0.09 | 0.61 | 0.70 | 0.09 | 0.16 | 0.25 | — | 4,412  | 4,412  | 0.28 | 0.18 | 1.76 | 4,474  |
| 2033                 | 0.71 | 0.55 | 8.62 | 23.3 | 0.04 | 0.09 | 0.61 | 0.70 | 0.09 | 0.16 | 0.25 | — | 4,372  | 4,372  | 0.27 | 0.17 | 1.53 | 4,432  |
| 2034                 | 0.69 | 0.55 | 8.55 | 23.2 | 0.04 | 0.09 | 0.60 | 0.70 | 0.09 | 0.16 | 0.25 | — | 4,334  | 4,334  | 0.26 | 0.17 | 1.33 | 4,394  |
| 2035                 | 0.68 | 0.55 | 8.47 | 23.2 | 0.04 | 0.09 | 0.60 | 0.70 | 0.09 | 0.16 | 0.24 | — | 4,298  | 4,298  | 0.24 | 0.17 | 1.14 | 4,355  |
| 2036                 | 0.67 | 0.55 | 8.41 | 23.1 | 0.04 | 0.09 | 0.60 | 0.69 | 0.09 | 0.16 | 0.24 | — | 4,265  | 4,265  | 0.24 | 0.16 | 0.97 | 4,320  |
| 2037                 | 0.66 | 0.54 | 8.34 | 23.0 | 0.04 | 0.09 | 0.60 | 0.69 | 0.08 | 0.16 | 0.24 | — | 4,235  | 4,235  | 0.22 | 0.15 | 0.83 | 4,287  |
| 2038                 | 1.01 | 0.88 | 14.0 | 38.2 | 0.06 | 0.13 | 0.92 | 1.05 | 0.13 | 0.23 | 0.35 | — | 6,875  | 6,875  | 0.33 | 0.20 | 0.99 | 6,946  |
| 2039                 | 1.55 | 1.39 | 19.1 | 48.4 | 0.07 | 0.20 | 2.17 | 2.37 | 0.20 | 0.47 | 0.67 | — | 8,785  | 8,785  | 0.37 | 0.20 | 1.35 | 8,855  |
| 2040                 | 1.53 | 1.34 | 19.1 | 48.3 | 0.07 | 0.20 | 2.17 | 2.37 | 0.20 | 0.47 | 0.67 | — | 8,753  | 8,753  | 0.36 | 0.19 | 1.14 | 8,820  |
| Daily - Winter (Max) | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | — | —      | —      | —    | —    | —    | —      |
| 2026                 | 4.18 | 2.27 | 36.1 | 79.5 | 0.19 | 0.46 | 6.66 | 7.12 | 0.45 | 1.13 | 1.57 | — | 19,037 | 19,037 | 2.12 | 1.42 | 0.46 | 19,513 |
| 2027                 | 2.71 | 1.66 | 22.2 | 59.8 | 0.11 | 0.33 | 4.87 | 5.20 | 0.32 | 0.77 | 1.09 | — | 13,338 | 13,338 | 1.29 | 0.83 | 0.25 | 13,617 |
| 2028                 | 3.45 | 2.19 | 30.8 | 83.3 | 0.15 | 0.42 | 5.48 | 5.90 | 0.41 | 0.93 | 1.33 | — | 17,742 | 17,742 | 1.56 | 1.02 | 0.30 | 18,084 |
| 2029                 | 2.20 | 1.49 | 21.9 | 58.2 | 0.10 | 0.25 | 3.47 | 3.72 | 0.24 | 0.61 | 0.85 | — | 11,702 | 11,702 | 0.93 | 0.62 | 0.18 | 11,911 |
| 2030                 | 1.77 | 1.49 | 20.1 | 49.7 | 0.07 | 0.21 | 2.17 | 2.39 | 0.21 | 0.48 | 0.68 | — | 9,157  | 9,157  | 0.50 | 0.25 | 0.14 | 9,245  |
| 2031                 | 1.72 | 1.46 | 19.9 | 49.5 | 0.07 | 0.21 | 2.17 | 2.39 | 0.20 | 0.48 | 0.68 | — | 9,101  | 9,101  | 0.48 | 0.25 | 0.12 | 9,186  |
| 2032                 | 0.73 | 0.55 | 8.78 | 23.3 | 0.04 | 0.09 | 0.61 | 0.70 | 0.09 | 0.16 | 0.25 | — | 4,394  | 4,394  | 0.28 | 0.18 | 0.05 | 4,455  |
| 2033                 | 0.71 | 0.55 | 8.70 | 23.2 | 0.04 | 0.09 | 0.61 | 0.70 | 0.09 | 0.16 | 0.25 | — | 4,355  | 4,355  | 0.27 | 0.17 | 0.04 | 4,414  |
| 2034                 | 0.69 | 0.55 | 8.61 | 23.1 | 0.04 | 0.09 | 0.60 | 0.70 | 0.09 | 0.16 | 0.25 | — | 4,317  | 4,317  | 0.26 | 0.17 | 0.03 | 4,375  |
| 2035                 | 0.68 | 0.55 | 8.54 | 23.1 | 0.04 | 0.09 | 0.60 | 0.70 | 0.09 | 0.16 | 0.24 | — | 4,281  | 4,281  | 0.24 | 0.17 | 0.03 | 4,337  |
| 2036                 | 0.67 | 0.55 | 8.48 | 23.0 | 0.04 | 0.09 | 0.60 | 0.69 | 0.09 | 0.16 | 0.24 | — | 4,248  | 4,248  | 0.24 | 0.16 | 0.03 | 4,303  |

|               |      |      |      |      |         |      |      |      |      |      |      |   |        |        |      |      |      |        |
|---------------|------|------|------|------|---------|------|------|------|------|------|------|---|--------|--------|------|------|------|--------|
| 2037          | 0.66 | 0.54 | 8.41 | 22.9 | 0.04    | 0.09 | 0.60 | 0.69 | 0.08 | 0.16 | 0.24 | — | 4,218  | 4,218  | 0.23 | 0.16 | 0.02 | 4,270  |
| 2038          | 0.92 | 0.78 | 12.1 | 32.6 | 0.05    | 0.12 | 1.02 | 1.14 | 0.12 | 0.24 | 0.35 | — | 5,858  | 5,858  | 0.29 | 0.20 | 0.03 | 5,924  |
| 2039          | 1.55 | 1.35 | 19.2 | 48.0 | 0.07    | 0.20 | 2.17 | 2.37 | 0.20 | 0.47 | 0.67 | — | 8,711  | 8,711  | 0.37 | 0.20 | 0.03 | 8,781  |
| 2040          | 1.52 | 1.33 | 19.2 | 47.9 | 0.07    | 0.20 | 2.17 | 2.37 | 0.20 | 0.47 | 0.67 | — | 8,680  | 8,680  | 0.37 | 0.20 | 0.03 | 8,748  |
| Average Daily | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —      | —      | —    | —    | —    | —      |
| 2026          | 2.10 | 1.25 | 17.3 | 44.7 | 0.10    | 0.24 | 3.49 | 3.73 | 0.23 | 0.57 | 0.80 | — | 10,063 | 10,063 | 1.00 | 0.64 | 3.50 | 10,282 |
| 2027          | 1.87 | 1.12 | 15.2 | 39.5 | 0.07    | 0.22 | 3.32 | 3.55 | 0.22 | 0.53 | 0.74 | — | 9,006  | 9,006  | 0.90 | 0.58 | 2.93 | 9,206  |
| 2028          | 2.11 | 1.36 | 19.5 | 52.2 | 0.09    | 0.25 | 3.22 | 3.47 | 0.24 | 0.55 | 0.80 | — | 10,941 | 10,941 | 0.95 | 0.60 | 3.09 | 11,146 |
| 2029          | 1.51 | 1.01 | 15.1 | 38.3 | 0.06    | 0.17 | 2.36 | 2.53 | 0.16 | 0.41 | 0.58 | — | 7,839  | 7,839  | 0.65 | 0.42 | 2.12 | 7,983  |
| 2030          | 1.05 | 0.86 | 12.3 | 30.9 | 0.05    | 0.13 | 1.17 | 1.29 | 0.12 | 0.26 | 0.39 | — | 5,725  | 5,725  | 0.33 | 0.18 | 1.33 | 5,787  |
| 2031          | 1.12 | 0.94 | 13.0 | 33.5 | 0.05    | 0.14 | 1.31 | 1.45 | 0.14 | 0.29 | 0.43 | — | 6,165  | 6,165  | 0.33 | 0.17 | 1.28 | 6,226  |
| 2032          | 0.52 | 0.39 | 6.27 | 16.7 | 0.03    | 0.07 | 0.43 | 0.50 | 0.07 | 0.11 | 0.18 | — | 3,148  | 3,148  | 0.20 | 0.13 | 0.54 | 3,192  |
| 2033          | 0.50 | 0.39 | 6.19 | 16.6 | 0.03    | 0.07 | 0.43 | 0.50 | 0.07 | 0.11 | 0.18 | — | 3,112  | 3,112  | 0.19 | 0.12 | 0.47 | 3,154  |
| 2034          | 0.49 | 0.39 | 6.14 | 16.5 | 0.03    | 0.07 | 0.43 | 0.49 | 0.07 | 0.11 | 0.18 | — | 3,084  | 3,084  | 0.18 | 0.12 | 0.41 | 3,127  |
| 2035          | 0.48 | 0.39 | 6.09 | 16.5 | 0.03    | 0.07 | 0.43 | 0.49 | 0.06 | 0.11 | 0.17 | — | 3,059  | 3,059  | 0.17 | 0.12 | 0.35 | 3,099  |
| 2036          | 0.48 | 0.39 | 6.06 | 16.4 | 0.03    | 0.06 | 0.43 | 0.49 | 0.06 | 0.11 | 0.17 | — | 3,044  | 3,044  | 0.17 | 0.12 | 0.30 | 3,083  |
| 2037          | 0.47 | 0.39 | 6.00 | 16.4 | 0.03    | 0.06 | 0.43 | 0.49 | 0.06 | 0.11 | 0.17 | — | 3,014  | 3,014  | 0.16 | 0.11 | 0.26 | 3,051  |
| 2038          | 0.57 | 0.48 | 7.53 | 20.4 | 0.03    | 0.07 | 0.54 | 0.62 | 0.07 | 0.13 | 0.21 | — | 3,697  | 3,697  | 0.19 | 0.13 | 0.26 | 3,739  |
| 2039          | 1.07 | 0.92 | 13.3 | 33.3 | 0.05    | 0.14 | 1.45 | 1.59 | 0.14 | 0.32 | 0.45 | — | 6,049  | 6,049  | 0.26 | 0.14 | 0.40 | 6,099  |
| 2040          | 0.96 | 0.84 | 12.1 | 32.0 | 0.05    | 0.13 | 1.22 | 1.35 | 0.13 | 0.27 | 0.40 | — | 5,765  | 5,765  | 0.25 | 0.14 | 0.30 | 5,812  |
| Annual        | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —      | —      | —    | —    | —    | —      |
| 2026          | 0.38 | 0.23 | 3.16 | 8.17 | 0.02    | 0.04 | 0.64 | 0.68 | 0.04 | 0.10 | 0.15 | — | 1,666  | 1,666  | 0.17 | 0.11 | 0.58 | 1,702  |
| 2027          | 0.34 | 0.20 | 2.78 | 7.21 | 0.01    | 0.04 | 0.61 | 0.65 | 0.04 | 0.10 | 0.14 | — | 1,491  | 1,491  | 0.15 | 0.10 | 0.49 | 1,524  |
| 2028          | 0.39 | 0.25 | 3.55 | 9.52 | 0.02    | 0.05 | 0.59 | 0.63 | 0.04 | 0.10 | 0.15 | — | 1,811  | 1,811  | 0.16 | 0.10 | 0.51 | 1,845  |
| 2029          | 0.28 | 0.18 | 2.76 | 6.99 | 0.01    | 0.03 | 0.43 | 0.46 | 0.03 | 0.08 | 0.11 | — | 1,298  | 1,298  | 0.11 | 0.07 | 0.35 | 1,322  |
| 2030          | 0.19 | 0.16 | 2.24 | 5.64 | 0.01    | 0.02 | 0.21 | 0.24 | 0.02 | 0.05 | 0.07 | — | 948    | 948    | 0.05 | 0.03 | 0.22 | 958    |
| 2031          | 0.21 | 0.17 | 2.38 | 6.11 | 0.01    | 0.03 | 0.24 | 0.26 | 0.02 | 0.05 | 0.08 | — | 1,021  | 1,021  | 0.05 | 0.03 | 0.21 | 1,031  |
| 2032          | 0.09 | 0.07 | 1.14 | 3.04 | < 0.005 | 0.01 | 0.08 | 0.09 | 0.01 | 0.02 | 0.03 | — | 521    | 521    | 0.03 | 0.02 | 0.09 | 529    |

|      |      |      |      |      |         |      |      |      |      |      |      |   |       |       |      |      |      |       |
|------|------|------|------|------|---------|------|------|------|------|------|------|---|-------|-------|------|------|------|-------|
| 2033 | 0.09 | 0.07 | 1.13 | 3.02 | < 0.005 | 0.01 | 0.08 | 0.09 | 0.01 | 0.02 | 0.03 | — | 515   | 515   | 0.03 | 0.02 | 0.08 | 522   |
| 2034 | 0.09 | 0.07 | 1.12 | 3.01 | < 0.005 | 0.01 | 0.08 | 0.09 | 0.01 | 0.02 | 0.03 | — | 511   | 511   | 0.03 | 0.02 | 0.07 | 518   |
| 2035 | 0.09 | 0.07 | 1.11 | 3.00 | < 0.005 | 0.01 | 0.08 | 0.09 | 0.01 | 0.02 | 0.03 | — | 506   | 506   | 0.03 | 0.02 | 0.06 | 513   |
| 2036 | 0.09 | 0.07 | 1.11 | 3.00 | < 0.005 | 0.01 | 0.08 | 0.09 | 0.01 | 0.02 | 0.03 | — | 504   | 504   | 0.03 | 0.02 | 0.05 | 510   |
| 2037 | 0.09 | 0.07 | 1.09 | 2.98 | < 0.005 | 0.01 | 0.08 | 0.09 | 0.01 | 0.02 | 0.03 | — | 499   | 499   | 0.03 | 0.02 | 0.04 | 505   |
| 2038 | 0.10 | 0.09 | 1.37 | 3.73 | 0.01    | 0.01 | 0.10 | 0.11 | 0.01 | 0.02 | 0.04 | — | 612   | 612   | 0.03 | 0.02 | 0.04 | 619   |
| 2039 | 0.19 | 0.17 | 2.42 | 6.08 | 0.01    | 0.03 | 0.26 | 0.29 | 0.02 | 0.06 | 0.08 | — | 1,002 | 1,002 | 0.04 | 0.02 | 0.07 | 1,010 |
| 2040 | 0.18 | 0.15 | 2.20 | 5.83 | 0.01    | 0.02 | 0.22 | 0.25 | 0.02 | 0.05 | 0.07 | — | 954   | 954   | 0.04 | 0.02 | 0.05 | 962   |

## 2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit.             | TOG  | ROG  | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R       | CO2e  |
|---------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|------|---------|---------|-------|
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Unmit.              | 4.85 | 4.10 | 38.8 | 47.1 | 0.09    | 0.50    | 0.01    | 0.51    | 0.46    | < 0.005 | 0.46    | 0.00 | 7,265 | 7,265 | 0.32 | 0.06    | 0.02    | 7,291 |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Unmit.              | 4.85 | 4.10 | 38.8 | 47.1 | 0.09    | 0.50    | 0.01    | 0.51    | 0.46    | < 0.005 | 0.46    | 0.00 | 7,264 | 7,264 | 0.32 | 0.06    | < 0.005 | 7,291 |
| Average Daily (Max) | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Unmit.              | 0.69 | 0.66 | 1.28 | 1.58 | < 0.005 | 0.02    | 0.01    | 0.02    | 0.02    | < 0.005 | 0.02    | 0.00 | 486   | 486   | 0.05 | 0.01    | 0.01    | 489   |
| Annual (Max)        | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Unmit.              | 0.13 | 0.12 | 0.23 | 0.29 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 80.4  | 80.4  | 0.01 | < 0.005 | < 0.005 | 81.0  |

## 2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Sector              | TOG     | ROG     | NOx     | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|---------------------|---------|---------|---------|------|---------|---------|-------|-------|---------|---------|---------|------|-------|-------|---------|---------|---------|-------|
| Daily, Summer (Max) | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Mobile              | < 0.005 | < 0.005 | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01  | 0.01  | < 0.005 | < 0.005 | < 0.005 | —    | 7.98  | 7.98  | < 0.005 | < 0.005 | 0.02    | 8.09  |
| Area                | 0.54    | 0.54    | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Energy              | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —     | 0.00  | 0.00    | —       | 0.00    | —    | 248   | 248   | 0.04    | < 0.005 | —       | 250   |
| Water               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Waste               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Off-Road            | 4.30    | 3.55    | 38.8    | 47.0 | 0.09    | 0.50    | —     | 0.50  | 0.46    | —       | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | —       | 7,033 |
| Total               | 4.85    | 4.10    | 38.8    | 47.1 | 0.09    | 0.50    | 0.01  | 0.51  | 0.46    | < 0.005 | 0.46    | 0.00 | 7,265 | 7,265 | 0.32    | 0.06    | 0.02    | 7,291 |
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Mobile              | < 0.005 | < 0.005 | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01  | 0.01  | < 0.005 | < 0.005 | < 0.005 | —    | 7.64  | 7.64  | < 0.005 | < 0.005 | < 0.005 | 7.74  |
| Area                | 0.54    | 0.54    | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Energy              | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —     | 0.00  | 0.00    | —       | 0.00    | —    | 248   | 248   | 0.04    | < 0.005 | —       | 250   |
| Water               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Waste               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Off-Road            | 4.30    | 3.55    | 38.8    | 47.0 | 0.09    | 0.50    | —     | 0.50  | 0.46    | —       | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | —       | 7,033 |
| Total               | 4.85    | 4.10    | 38.8    | 47.1 | 0.09    | 0.50    | 0.01  | 0.51  | 0.46    | < 0.005 | 0.46    | 0.00 | 7,264 | 7,264 | 0.32    | 0.06    | < 0.005 | 7,291 |
| Average Daily       | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Mobile              | < 0.005 | < 0.005 | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01  | 0.01  | < 0.005 | < 0.005 | < 0.005 | —    | 7.65  | 7.65  | < 0.005 | < 0.005 | 0.01    | 7.76  |
| Area                | 0.54    | 0.54    | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Energy              | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —     | 0.00  | 0.00    | —       | 0.00    | —    | 248   | 248   | 0.04    | < 0.005 | —       | 250   |
| Water               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Waste               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |

|          |         |         |         |      |         |         |         |         |         |         |         |      |      |      |         |         |         |      |
|----------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|------|------|------|---------|---------|---------|------|
| Off-Road | 0.14    | 0.12    | 1.28    | 1.55 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | —    | 230  | 230  | 0.01    | < 0.005 | —       | 231  |
| Total    | 0.69    | 0.66    | 1.28    | 1.58 | < 0.005 | 0.02    | 0.01    | 0.02    | 0.02    | < 0.005 | 0.02    | 0.00 | 486  | 486  | 0.05    | 0.01    | 0.01    | 489  |
| Annual   | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —    | —    | —    | —       | —       | —       | —    |
| Mobile   | < 0.005 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | —    | 1.27 | 1.27 | < 0.005 | < 0.005 | < 0.005 | 1.28 |
| Area     | 0.10    | 0.10    | —       | —    | —       | —       | —       | —       | —       | —       | —       | —    | —    | —    | —       | —       | —       | —    |
| Energy   | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —       | 0.00    | 0.00    | —       | 0.00    | —    | 41.0 | 41.0 | 0.01    | < 0.005 | —       | 41.4 |
| Water    | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | —       | 0.00 |
| Waste    | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00 | 0.00 | 0.00    | 0.00    | —       | 0.00 |
| Off-Road | 0.03    | 0.02    | 0.23    | 0.28 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | —    | 38.2 | 38.2 | < 0.005 | < 0.005 | —       | 38.3 |
| Total    | 0.13    | 0.12    | 0.23    | 0.29 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 80.4 | 80.4 | 0.01    | < 0.005 | < 0.005 | 81.0 |

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Sector              | TOG     | ROG     | NOx     | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|---------------------|---------|---------|---------|------|---------|---------|-------|-------|---------|---------|---------|------|-------|-------|---------|---------|---------|-------|
| Daily, Summer (Max) | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Mobile              | < 0.005 | < 0.005 | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01  | 0.01  | < 0.005 | < 0.005 | < 0.005 | —    | 7.98  | 7.98  | < 0.005 | < 0.005 | 0.02    | 8.09  |
| Area                | 0.54    | 0.54    | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Energy              | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —     | 0.00  | 0.00    | —       | 0.00    | —    | 248   | 248   | 0.04    | < 0.005 | —       | 250   |
| Water               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Waste               | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Off-Road            | 4.30    | 3.55    | 38.8    | 47.0 | 0.09    | 0.50    | —     | 0.50  | 0.46    | —       | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | —       | 7,033 |
| Total               | 4.85    | 4.10    | 38.8    | 47.1 | 0.09    | 0.50    | 0.01  | 0.51  | 0.46    | < 0.005 | 0.46    | 0.00 | 7,265 | 7,265 | 0.32    | 0.06    | 0.02    | 7,291 |
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —       | —     | —     | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Mobile              | < 0.005 | < 0.005 | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01  | 0.01  | < 0.005 | < 0.005 | < 0.005 | —    | 7.64  | 7.64  | < 0.005 | < 0.005 | < 0.005 | 7.74  |



|               |         |         |         |      |         |         |         |         |         |         |         |      |       |       |         |         |         |       |
|---------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|---------|-------|
| Area          | 0.54    | 0.54    | —       | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Energy        | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —       | 0.00    | 0.00    | —       | 0.00    | —    | 248   | 248   | 0.04    | < 0.005 | —       | 250   |
| Water         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Waste         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Off-Road      | 4.30    | 3.55    | 38.8    | 47.0 | 0.09    | 0.50    | —       | 0.50    | 0.46    | —       | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | —       | 7,033 |
| Total         | 4.85    | 4.10    | 38.8    | 47.1 | 0.09    | 0.50    | 0.01    | 0.51    | 0.46    | < 0.005 | 0.46    | 0.00 | 7,264 | 7,264 | 0.32    | 0.06    | < 0.005 | 7,291 |
| Average Daily | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Mobile        | < 0.005 | < 0.005 | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | —    | 7.65  | 7.65  | < 0.005 | < 0.005 | 0.01    | 7.76  |
| Area          | 0.54    | 0.54    | —       | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Energy        | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —       | 0.00    | 0.00    | —       | 0.00    | —    | 248   | 248   | 0.04    | < 0.005 | —       | 250   |
| Water         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Waste         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Off-Road      | 0.14    | 0.12    | 1.28    | 1.55 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | —    | 230   | 230   | 0.01    | < 0.005 | —       | 231   |
| Total         | 0.69    | 0.66    | 1.28    | 1.58 | < 0.005 | 0.02    | 0.01    | 0.02    | 0.02    | < 0.005 | 0.02    | 0.00 | 486   | 486   | 0.05    | 0.01    | 0.01    | 489   |
| Annual        | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Mobile        | < 0.005 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | —    | 1.27  | 1.27  | < 0.005 | < 0.005 | < 0.005 | 1.28  |
| Area          | 0.10    | 0.10    | —       | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Energy        | 0.00    | 0.00    | 0.00    | 0.00 | 0.00    | 0.00    | —       | 0.00    | 0.00    | —       | 0.00    | —    | 41.0  | 41.0  | 0.01    | < 0.005 | —       | 41.4  |
| Water         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Waste         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | 0.00 | 0.00  | 0.00  | 0.00    | 0.00    | —       | 0.00  |
| Off-Road      | 0.03    | 0.02    | 0.23    | 0.28 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | —    | 38.2  | 38.2  | < 0.005 | < 0.005 | —       | 38.3  |
| Total         | 0.13    | 0.12    | 0.23    | 0.29 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 80.4  | 80.4  | 0.01    | < 0.005 | < 0.005 | 81.0  |

3. Construction Emissions Details

### 3.1. Demolition - CPS (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2     | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R    | CO2e  |
|-----------------------------|------|------|------|------|---------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|---------|------|-------|
| Onsite                      | —    | —    | —    | —    | —       | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —       | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.98 | 0.82 | 7.94 | 12.4 | 0.02    | 0.22  | —       | 0.22    | 0.20   | —       | 0.20    | —    | 2,262 | 2,262 | 0.09 | 0.02    | —    | 2,269 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.09 | 0.07 | 0.70 | 1.09 | < 0.005 | 0.02  | —       | 0.02    | 0.02   | —       | 0.02    | —    | 198   | 198   | 0.01 | < 0.005 | —    | 199   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —       | —    | —     |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Off-Road Equipment          | 0.02    | 0.01    | 0.13    | 0.20    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 32.8 | 32.8 | < 0.005 | < 0.005 | —       | 32.9 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.07    | 0.07    | 0.06    | 0.77    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 235  | 235  | < 0.005 | < 0.005 | 0.02    | 236  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling                     | 0.04    | < 0.005 | 0.32    | 0.32    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 215  | 215  | 0.04    | 0.03    | 0.01    | 226  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 20.6 | 20.6 | < 0.005 | < 0.005 | 0.02    | 20.7 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.28 | 2.28 | < 0.005 | < 0.005 | < 0.005 | 2.39 |
| Hauling                     | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.8 | 18.8 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 3.42 | 3.42 | < 0.005 | < 0.005 | < 0.005 | 3.43 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.38 | 0.38 | < 0.005 | < 0.005 | < 0.005 | 0.40 |
| Hauling                     | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.11 | 3.11 | < 0.005 | < 0.005 | < 0.005 | 3.28 |

3.2. Demolition - CPS (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.28    | 0.28    | 5.47 | 14.3 | 0.02    | 0.04    | —       | 0.04    | 0.04    | —       | 0.04    | —    | 2,262 | 2,262 | 0.09    | 0.02    | —    | 2,269 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.02    | 0.02    | 0.48 | 1.25 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | —    | 198   | 198   | 0.01    | < 0.005 | —    | 199   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | < 0.005 | < 0.005 | 0.09 | 0.23 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | —    | 32.8  | 32.8  | < 0.005 | < 0.005 | —    | 32.9  |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.07    | 0.07    | 0.06    | 0.77    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 235  | 235  | < 0.005 | < 0.005 | 0.02    | 236  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling                     | 0.04    | < 0.005 | 0.32    | 0.32    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 215  | 215  | 0.04    | 0.03    | 0.01    | 226  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 20.6 | 20.6 | < 0.005 | < 0.005 | 0.02    | 20.7 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.28 | 2.28 | < 0.005 | < 0.005 | < 0.005 | 2.39 |
| Hauling                     | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.8 | 18.8 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 3.42 | 3.42 | < 0.005 | < 0.005 | < 0.005 | 3.43 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.38 | 0.38 | < 0.005 | < 0.005 | < 0.005 | 0.40 |
| Hauling                     | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.11 | 3.11 | < 0.005 | < 0.005 | < 0.005 | 3.28 |

3.3. Demolition - SRPS (2038) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite   | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |         |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Daily, Summer (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.82 | 0.69 | 6.59 | 12.0 | 0.02    | 0.11    | —       | 0.11    | 0.10    | —       | 0.10    | — | 2,262 | 2,262 | 0.09    | 0.02    | —    | 2,269 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.10 | 0.08 | 0.79 | 1.45 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 273   | 273   | 0.01    | < 0.005 | —    | 274   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.02 | 0.02 | 0.14 | 0.26 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 45.1  | 45.1  | < 0.005 | < 0.005 | —    | 45.3  |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |



|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck        | 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    | 0.00 |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.06    | 0.06    | 0.03    | 0.66    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 228  | 228  | < 0.005 | < 0.005 | 0.18    | 229  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Hauling             | 0.02    | < 0.005 | 0.18    | 0.24    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 160  | 160  | 0.02    | 0.03    | 0.10    | 169  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.03    | 0.03    | 0.00    | 0.01    | 0.01    | — | 26.0 | 26.0 | < 0.005 | < 0.005 | 0.01    | 26.1 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.28 | 2.28 | < 0.005 | < 0.005 | < 0.005 | 2.39 |
| Hauling             | < 0.005 | < 0.005 | 0.02    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.3 | 19.3 | < 0.005 | < 0.005 | 0.01    | 20.3 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 4.31 | 4.31 | < 0.005 | < 0.005 | < 0.005 | 4.33 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.38 | 0.38 | < 0.005 | < 0.005 | < 0.005 | 0.40 |
| Hauling             | < 0.005 | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.20 | 3.20 | < 0.005 | < 0.005 | < 0.005 | 3.37 |

### 3.4. Demolition - SRPS (2038) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |         |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Off-Road Equipm ent         | 0.28 | 0.28 | 5.47 | 14.3 | 0.02    | 0.04    | —       | 0.04    | 0.04    | —       | 0.04    | — | 2,262 | 2,262 | 0.09    | 0.02    | —    | 2,269 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipm ent         | 0.03 | 0.03 | 0.66 | 1.72 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 273   | 273   | 0.01    | < 0.005 | —    | 274   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipm ent         | 0.01 | 0.01 | 0.12 | 0.31 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 45.1  | 45.1  | < 0.005 | < 0.005 | —    | 45.3  |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.06    | 0.06    | 0.03    | 0.66    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 228  | 228  | < 0.005 | < 0.005 | 0.18    | 229  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Hauling             | 0.02    | < 0.005 | 0.18    | 0.24    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 160  | 160  | 0.02    | 0.03    | 0.10    | 169  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.03    | 0.03    | 0.00    | 0.01    | 0.01    | — | 26.0 | 26.0 | < 0.005 | < 0.005 | 0.01    | 26.1 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.28 | 2.28 | < 0.005 | < 0.005 | < 0.005 | 2.39 |
| Hauling             | < 0.005 | < 0.005 | 0.02    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.3 | 19.3 | < 0.005 | < 0.005 | 0.01    | 20.3 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 4.31 | 4.31 | < 0.005 | < 0.005 | < 0.005 | 4.33 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.38 | 0.38 | < 0.005 | < 0.005 | < 0.005 | 0.40 |
| Hauling             | < 0.005 | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.20 | 3.20 | < 0.005 | < 0.005 | < 0.005 | 3.37 |

3.5. Site Preparation - CPS (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipm ent | 0.64    | 0.54    | 4.82    | 8.37    | 0.01    | 0.16    | —       | 0.16    | 0.15    | —       | 0.15    | — | 1,272 | 1,272 | 0.05    | 0.01    | —       | 1,277 |
| Onsite truck        | 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    | 0.00  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 0.02    | 0.02    | 0.15    | 0.25    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 38.3  | 38.3  | < 0.005 | < 0.005 | —       | 38.5  |
| Onsite truck        | 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    | 0.00  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | < 0.005 | < 0.005 | 0.03    | 0.05    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 6.35  | 6.35  | < 0.005 | < 0.005 | —       | 6.37  |
| Onsite truck        | 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    | 0.00  |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.02    | 0.02    | 0.02    | 0.26    | 0.00    | 0.00    | 0.08    | 0.08    | 0.00    | 0.02    | 0.02    | — | 78.3  | 78.3  | < 0.005 | < 0.005 | 0.01    | 78.6  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0  | 26.0  | < 0.005 | < 0.005 | < 0.005 | 27.2  |
| Hauling             | 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    | 0.00  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 2.36  | 2.36  | < 0.005 | < 0.005 | < 0.005 | 2.37  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.78  | 0.78  | < 0.005 | < 0.005 | < 0.005 | 0.82  |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Hauling | 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    | 0.00 |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 0.39 | 0.39 | < 0.005 | < 0.005 | < 0.005 | 0.39 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.13 | 0.13 | < 0.005 | < 0.005 | < 0.005 | 0.14 |
| Hauling | 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    | 0.00 |

3.6. Site Preparation - CPS (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T   | PM2.5E  | PM2.5D | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|---------------------|------|------|------|------|---------|---------|-------|---------|---------|--------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite              | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.19 | 0.18 | 3.51 | 8.86 | 0.01    | 0.03    | —     | 0.03    | 0.03    | —      | 0.03    | —    | 1,272 | 1,272 | 0.05    | 0.01    | —    | 1,277 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.01 | 0.01 | 0.11 | 0.27 | < 0.005 | < 0.005 | —     | < 0.005 | < 0.005 | —      | < 0.005 | —    | 38.3  | 38.3  | < 0.005 | < 0.005 | —    | 38.5  |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Off-Road Equipm ent | < 0.005 | < 0.005 | 0.02    | 0.05    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 6.35 | 6.35 | < 0.005 | < 0.005 | —       | 6.37 |
| Onsite truck        | 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    | 0.00 |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.02    | 0.02    | 0.02    | 0.26    | 0.00    | 0.00    | 0.08    | 0.08    | 0.00    | 0.02    | 0.02    | — | 78.3 | 78.3 | < 0.005 | < 0.005 | 0.01    | 78.6 |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling             | 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    | 0.00 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 2.36 | 2.36 | < 0.005 | < 0.005 | < 0.005 | 2.37 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.78 | 0.78 | < 0.005 | < 0.005 | < 0.005 | 0.82 |
| Hauling             | 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    | 0.00 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 0.39 | 0.39 | < 0.005 | < 0.005 | < 0.005 | 0.39 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.13 | 0.13 | < 0.005 | < 0.005 | < 0.005 | 0.14 |
| Hauling             | 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    | 0.00 |

3.7. Site Preparation - SRPS (2038) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite   | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |



|                     |         |         |      |      |         |         |      |         |         |         |         |   |       |       |         |         |      |       |
|---------------------|---------|---------|------|------|---------|---------|------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipm ent | 0.53    | 0.44    | 4.05 | 8.29 | 0.01    | 0.09    | —    | 0.09    | 0.08    | —       | 0.08    | — | 1,272 | 1,272 | 0.05    | 0.01    | —    | 1,277 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Average Daily       | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipm ent | 0.03    | 0.03    | 0.24 | 0.50 | < 0.005 | 0.01    | —    | 0.01    | 0.01    | —       | 0.01    | — | 76.7  | 76.7  | < 0.005 | < 0.005 | —    | 77.0  |
| Onsite truck        | 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 | 0.00  |
| Annual              | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipm ent | 0.01    | < 0.005 | 0.04 | 0.09 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —       | < 0.005 | — | 12.7  | 12.7  | < 0.005 | < 0.005 | —    | 12.7  |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.02    | 0.02    | 0.01 | 0.22 | 0.00    | 0.00    | 0.08 | 0.08    | 0.00    | 0.02    | 0.02    | — | 76.0  | 76.0  | < 0.005 | < 0.005 | 0.06 | 76.2  |
| Vendor              | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9  | 18.9  | < 0.005 | < 0.005 | 0.01 | 19.8  |
| Hauling             | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 4.34 | 4.34 | < 0.005 | < 0.005 | < 0.005 | 4.35 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.14 | 1.14 | < 0.005 | < 0.005 | < 0.005 | 1.20 |
| Hauling             | 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    | 0.00 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 0.72 | 0.72 | < 0.005 | < 0.005 | < 0.005 | 0.72 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.19 | 0.19 | < 0.005 | < 0.005 | < 0.005 | 0.20 |
| Hauling             | 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    | 0.00 |

3.8. Site Preparation - SRPS (2038) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite              | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment  | 0.19 | 0.18 | 3.51 | 8.86 | 0.01 | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,272 | 1,272 | 0.05 | 0.01 | —    | 1,277 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Average Daily       | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Off-Road Equipm     | 0.01    | 0.01    | 0.21    | 0.53    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 76.7 | 76.7 | < 0.005 | < 0.005 | —       | 77.0 |
| Onsite truck        | 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    | 0.00 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment  | < 0.005 | < 0.005 | 0.04    | 0.10    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 12.7 | 12.7 | < 0.005 | < 0.005 | —       | 12.7 |
| Onsite truck        | 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    | 0.00 |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.02    | 0.02    | 0.01    | 0.22    | 0.00    | 0.00    | 0.08    | 0.08    | 0.00    | 0.02    | 0.02    | — | 76.0 | 76.0 | < 0.005 | < 0.005 | 0.06    | 76.2 |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Hauling             | 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    | 0.00 |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 4.34 | 4.34 | < 0.005 | < 0.005 | < 0.005 | 4.35 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.14 | 1.14 | < 0.005 | < 0.005 | < 0.005 | 1.20 |
| Hauling             | 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    | 0.00 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 0.72 | 0.72 | < 0.005 | < 0.005 | < 0.005 | 0.72 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.19 | 0.19 | < 0.005 | < 0.005 | < 0.005 | 0.20 |
| Hauling             | 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    | 0.00 |

### 3.9. Grading - initial pipes and vaults (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|---------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 1.05 | 0.87    | 7.74 | 10.4 | 0.02    | 0.26    | —       | 0.26    | 0.24    | —       | 0.24    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 11.5  | 11.5  | < 0.005 | < 0.005 | 0.01    | 12.2  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 1.05 | 0.87    | 7.74 | 10.4 | 0.02    | 0.26    | —       | 0.26    | 0.24    | —       | 0.24    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 11.5  | 11.5  | < 0.005 | < 0.005 | < 0.005 | 12.1  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.75 | 0.62    | 5.53 | 7.41 | 0.01    | 0.18    | —       | 0.18    | 0.17    | —       | 0.17    | —    | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,254 |

|                             |         |         |      |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 8.22  | 8.22  | < 0.005 | < 0.005 | < 0.005 | 8.70  |
| Annual                      | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.14    | 0.11    | 1.01 | 1.35    | < 0.005 | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.36  | 1.36  | < 0.005 | < 0.005 | < 0.005 | 1.44  |
| Offsite                     | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.69    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 177   | 177   | < 0.005 | < 0.005 | 0.62    | 178   |
| Vendor                      | 0.01    | < 0.005 | 0.05 | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | 0.07    | 30.9  |
| Hauling                     | 0.30    | 0.03    | 2.06 | 1.78    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,229 | 1,229 | 0.26    | 0.20    | 2.20    | 1,298 |
| Daily, Winter (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.63    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | 0.01    | 0.02    | 170   |
| Vendor                      | 0.01    | < 0.005 | 0.05 | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | < 0.005 | 30.9  |
| Hauling                     | 0.30    | 0.03    | 2.17 | 1.78    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,229 | 1,229 | 0.26    | 0.20    | 0.06    | 1,295 |
| Average Daily               | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.44    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 120   | 120   | < 0.005 | < 0.005 | 0.19    | 122   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.1  | 21.1  | < 0.005 | < 0.005 | 0.02    | 22.1  |

|         |         |         |      |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Hauling | 0.21    | 0.02    | 1.53 | 1.27    | 0.01    | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 878  | 878  | 0.19    | 0.14    | 0.68    | 926  |
| Annual  | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | 0.01 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.9 | 19.9 | < 0.005 | < 0.005 | 0.03    | 20.1 |
| Vendor  | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.49 | 3.49 | < 0.005 | < 0.005 | < 0.005 | 3.66 |
| Hauling | 0.04    | < 0.005 | 0.28 | 0.23    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 145  | 145  | 0.03    | 0.02    | 0.11    | 153  |

3.10. Grading - initial pipes and vaults (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20    | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 11.5  | 11.5  | < 0.005 | < 0.005 | 0.01 | 12.2  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20    | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —    | —     |



|                             |         |         |      |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck                | 0.01    | < 0.005 | 0.04 | 0.03    | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.5  | 11.5  | < 0.005 | < 0.005 | < 0.005 | 12.1  |
| Average Daily               | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.14    | 0.14    | 2.44 | 8.04    | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,254 |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 8.22  | 8.22  | < 0.005 | < 0.005 | < 0.005 | 8.70  |
| Annual                      | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.03    | 0.03    | 0.45 | 1.47    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.36  | 1.36  | < 0.005 | < 0.005 | < 0.005 | 1.44  |
| Offsite                     | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.69    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 177   | 177   | < 0.005 | < 0.005 | 0.62    | 178   |
| Vendor                      | 0.01    | < 0.005 | 0.05 | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | 0.07    | 30.9  |
| Hauling                     | 0.30    | 0.03    | 2.06 | 1.78    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,229 | 1,229 | 0.26    | 0.20    | 2.20    | 1,298 |
| Daily, Winter (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.63    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | 0.01    | 0.02    | 170   |

|               |         |         |      |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Vendor        | 0.01    | < 0.005 | 0.05 | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | < 0.005 | 30.9  |
| Hauling       | 0.30    | 0.03    | 2.17 | 1.78    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,229 | 1,229 | 0.26    | 0.20    | 0.06    | 1,295 |
| Average Daily | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker        | 0.04    | 0.04    | 0.03 | 0.44    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 120   | 120   | < 0.005 | < 0.005 | 0.19    | 122   |
| Vendor        | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.1  | 21.1  | < 0.005 | < 0.005 | 0.02    | 22.1  |
| Hauling       | 0.21    | 0.02    | 1.53 | 1.27    | 0.01    | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 878   | 878   | 0.19    | 0.14    | 0.68    | 926   |
| Annual        | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker        | 0.01    | 0.01    | 0.01 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.9  | 19.9  | < 0.005 | < 0.005 | 0.03    | 20.1  |
| Vendor        | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.49  | 3.49  | < 0.005 | < 0.005 | < 0.005 | 3.66  |
| Hauling       | 0.04    | < 0.005 | 0.28 | 0.23    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 145   | 145   | 0.03    | 0.02    | 0.11    | 153   |

3.11. Grading - initial pipes and vaults (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 1.00    | 0.84    | 7.47 | 10.4 | 0.02    | 0.23    | —       | 0.23    | 0.21    | —       | 0.21    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —    | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 11.3  | 11.3  | < 0.005 | < 0.005 | 0.01 | 11.9  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |

|                             |         |         |      |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 1.00    | 0.84    | 7.47 | 10.4    | 0.02    | 0.23    | —       | 0.23    | 0.21    | —       | 0.21    | — | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03    | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.2  | 11.2  | < 0.005 | < 0.005 | < 0.005 | 11.9  |
| Average Daily               | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.71    | 0.60    | 5.33 | 7.40    | 0.01    | 0.16    | —       | 0.16    | 0.15    | —       | 0.15    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,254 |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 8.04  | 8.04  | < 0.005 | < 0.005 | < 0.005 | 8.50  |
| Annual                      | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.13    | 0.11    | 0.97 | 1.35    | < 0.005 | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.33  | 1.33  | < 0.005 | < 0.005 | < 0.005 | 1.41  |
| Offsite                     | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.66    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 174   | 174   | < 0.005 | < 0.005 | 0.56    | 175   |
| Vendor                      | 0.01    | < 0.005 | 0.04 | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | 0.06    | 30.2  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Hauling             | 0.28    | 0.03    | 1.92    | 1.75    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,194 | 1,194 | 0.25    | 0.19    | 2.03    | 1,260 |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.06    | 0.05    | 0.04    | 0.60    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 165   | 165   | < 0.005 | 0.01    | 0.01    | 167   |
| Vendor              | 0.01    | < 0.005 | 0.05    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | < 0.005 | 30.1  |
| Hauling             | 0.28    | 0.03    | 2.02    | 1.75    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,193 | 1,193 | 0.25    | 0.19    | 0.05    | 1,258 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.04    | 0.03    | 0.03    | 0.41    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 118   | 118   | < 0.005 | < 0.005 | 0.17    | 119   |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.5  | 20.5  | < 0.005 | < 0.005 | 0.02    | 21.5  |
| Hauling             | 0.20    | 0.02    | 1.43    | 1.25    | < 0.005 | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 853   | 853   | 0.18    | 0.14    | 0.63    | 899   |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.03    | 19.8  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.40  | 3.40  | < 0.005 | < 0.005 | < 0.005 | 3.56  |
| Hauling             | 0.04    | < 0.005 | 0.26    | 0.23    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 141   | 141   | 0.03    | 0.02    | 0.10    | 149   |

3.12. Grading - initial pipes and vaults (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | — | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |         |         |      |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03    | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.3  | 11.3  | < 0.005 | < 0.005 | 0.01    | 11.9  |
| Daily, Winter (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.20    | 0.20    | 3.42 | 11.3    | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03    | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.2  | 11.2  | < 0.005 | < 0.005 | < 0.005 | 11.9  |
| Average Daily               | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.14    | 0.14    | 2.44 | 8.04    | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,254 |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 8.04  | 8.04  | < 0.005 | < 0.005 | < 0.005 | 8.50  |
| Annual                      | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.03    | 0.03    | 0.45 | 1.47    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.33  | 1.33  | < 0.005 | < 0.005 | < 0.005 | 1.41  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.06    | 0.05    | 0.04    | 0.66    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 174   | 174   | < 0.005 | < 0.005 | 0.56    | 175   |
| Vendor              | 0.01    | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | 0.06    | 30.2  |
| Hauling             | 0.28    | 0.03    | 1.92    | 1.75    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,194 | 1,194 | 0.25    | 0.19    | 2.03    | 1,260 |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.06    | 0.05    | 0.04    | 0.60    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 165   | 165   | < 0.005 | 0.01    | 0.01    | 167   |
| Vendor              | 0.01    | < 0.005 | 0.05    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | < 0.005 | 30.1  |
| Hauling             | 0.28    | 0.03    | 2.02    | 1.75    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,193 | 1,193 | 0.25    | 0.19    | 0.05    | 1,258 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.04    | 0.03    | 0.03    | 0.41    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 118   | 118   | < 0.005 | < 0.005 | 0.17    | 119   |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.5  | 20.5  | < 0.005 | < 0.005 | 0.02    | 21.5  |
| Hauling             | 0.20    | 0.02    | 1.43    | 1.25    | < 0.005 | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 853   | 853   | 0.18    | 0.14    | 0.63    | 899   |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.03    | 19.8  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.40  | 3.40  | < 0.005 | < 0.005 | < 0.005 | 3.56  |
| Hauling             | 0.04    | < 0.005 | 0.26    | 0.23    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 141   | 141   | 0.03    | 0.02    | 0.10    | 149   |

3.13. Grading - initial pipes and vaults (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |



|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road                    | 0.96    | 0.80    | 7.19 | 10.4 | 0.02    | 0.20    | —       | 0.20    | 0.19    | —       | 0.19    | — | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.0  | 11.0  | < 0.005 | < 0.005 | 0.01    | 11.6  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.96    | 0.80    | 7.19 | 10.4 | 0.02    | 0.20    | —       | 0.20    | 0.19    | —       | 0.19    | — | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.0  | 11.0  | < 0.005 | < 0.005 | < 0.005 | 11.6  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.69    | 0.58    | 5.15 | 7.41 | 0.01    | 0.14    | —       | 0.14    | 0.13    | —       | 0.13    | — | 1,253 | 1,253 | 0.05    | 0.01    | —       | 1,257 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.03 | 0.02 | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 7.86  | 7.86  | < 0.005 | < 0.005 | < 0.005 | 8.31  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.13    | 0.11    | 0.94 | 1.35 | < 0.005 | 0.03    | —       | 0.03    | 0.02    | —       | 0.02    | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.30  | 1.30  | < 0.005 | < 0.005 | < 0.005 | 1.38  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.62    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171   | 171   | < 0.005 | < 0.005 | 0.50    | 172   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | 0.05    | 29.2  |
| Hauling                     | 0.26    | 0.02    | 1.77    | 1.71    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,154 | 1,154 | 0.23    | 0.19    | 1.86    | 1,218 |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.04    | 0.57    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | 0.01    | 0.01    | 164   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | < 0.005 | 29.2  |
| Hauling                     | 0.26    | 0.02    | 1.88    | 1.72    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,154 | 1,154 | 0.23    | 0.19    | 0.05    | 1,216 |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.40    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116   | 116   | < 0.005 | < 0.005 | 0.15    | 117   |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0  | 20.0  | < 0.005 | < 0.005 | 0.02    | 20.9  |
| Hauling                     | 0.19    | 0.02    | 1.32    | 1.23    | < 0.005 | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 827   | 827   | 0.16    | 0.13    | 0.58    | 871   |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2  | 19.2  | < 0.005 | < 0.005 | 0.03    | 19.3  |
| Vendor                      | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31  | 3.31  | < 0.005 | < 0.005 | < 0.005 | 3.46  |
| Hauling                     | 0.03    | < 0.005 | 0.24    | 0.22    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 137   | 137   | 0.03    | 0.02    | 0.10    | 144   |

### 3.14. Grading - initial pipes and vaults (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|---------|-------|
| Onsite                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.20    | 0.20    | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 11.0  | 11.0  | < 0.005 | < 0.005 | 0.01    | 11.6  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.20    | 0.20    | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 11.0  | 11.0  | < 0.005 | < 0.005 | < 0.005 | 11.6  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.14    | 0.14    | 2.45 | 8.06 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | —    | 1,253 | 1,253 | 0.05    | 0.01    | —       | 1,257 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —       | —     |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck                | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 7.86  | 7.86  | < 0.005 | < 0.005 | < 0.005 | 8.31  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.45    | 1.47    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.30  | 1.30  | < 0.005 | < 0.005 | < 0.005 | 1.38  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.62    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171   | 171   | < 0.005 | < 0.005 | 0.50    | 172   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | 0.05    | 29.2  |
| Hauling                     | 0.26    | 0.02    | 1.77    | 1.71    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,154 | 1,154 | 0.23    | 0.19    | 1.86    | 1,218 |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.04    | 0.57    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | 0.01    | 0.01    | 164   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | < 0.005 | 29.2  |
| Hauling                     | 0.26    | 0.02    | 1.88    | 1.72    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,154 | 1,154 | 0.23    | 0.19    | 0.05    | 1,216 |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.40    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116   | 116   | < 0.005 | < 0.005 | 0.15    | 117   |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0  | 20.0  | < 0.005 | < 0.005 | 0.02    | 20.9  |
| Hauling                     | 0.19    | 0.02    | 1.32    | 1.23    | < 0.005 | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 827   | 827   | 0.16    | 0.13    | 0.58    | 871   |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2  | 19.2  | < 0.005 | < 0.005 | 0.03    | 19.3  |

|         |         |         |      |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31 | 3.31 | < 0.005 | < 0.005 | < 0.005 | 3.46 |
| Hauling | 0.03    | < 0.005 | 0.24 | 0.22    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 137  | 137  | 0.03    | 0.02    | 0.10    | 144  |

### 3.15. Grading - initial pipes and vaults (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|---------|-------|
| Onsite                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.94    | 0.78    | 6.98 | 10.3 | 0.02    | 0.18    | —       | 0.18    | 0.17    | —       | 0.17    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 10.7  | 10.7  | < 0.005 | < 0.005 | 0.01    | 11.3  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.94    | 0.78    | 6.98 | 10.3 | 0.02    | 0.18    | —       | 0.18    | 0.17    | —       | 0.17    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —       | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 10.7  | 10.7  | < 0.005 | < 0.005 | < 0.005 | 11.3  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —       | —     |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.67    | 0.56    | 4.98    | 7.38    | 0.01    | 0.13    | —       | 0.13    | 0.12    | —       | 0.12    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,254 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 7.63  | 7.63  | < 0.005 | < 0.005 | < 0.005 | 8.07  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.12    | 0.10    | 0.91    | 1.35    | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.26  | 1.26  | < 0.005 | < 0.005 | < 0.005 | 1.34  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.59    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | < 0.005 | 0.45    | 169   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | 0.05    | 28.3  |
| Hauling                     | 0.24    | 0.02    | 1.62    | 1.66    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,113 | 1,113 | 0.21    | 0.18    | 1.68    | 1,174 |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.04    | 0.54    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159   | 159   | < 0.005 | 0.01    | 0.01    | 161   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | < 0.005 | 28.2  |
| Hauling                     | 0.24    | 0.02    | 1.71    | 1.66    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,113 | 1,113 | 0.21    | 0.18    | 0.04    | 1,172 |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.37    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114   | 114   | < 0.005 | < 0.005 | 0.14    | 114   |



|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.01    | 20.2 |
| Hauling | 0.17    | 0.02    | 1.20    | 1.19    | < 0.005 | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 795  | 795  | 0.15    | 0.13    | 0.52    | 838  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.02    | 18.9 |
| Vendor  | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19 | 3.19 | < 0.005 | < 0.005 | < 0.005 | 3.34 |
| Hauling | 0.03    | < 0.005 | 0.22    | 0.22    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 132  | 132  | 0.02    | 0.02    | 0.09    | 139  |

### 3.16. Grading - initial pipes and vaults (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.20    | 0.20    | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —    | 1,755 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | —    | 10.7  | 10.7  | < 0.005 | < 0.005 | 0.01 | 11.3  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.20    | 0.20    | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | —    | 1,749 | 1,749 | 0.07    | 0.01    | —    | 1,755 |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 10.7  | 10.7  | < 0.005 | < 0.005 | < 0.005 | 11.3  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.14    | 0.14    | 2.44    | 8.04    | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,254 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.50    | 0.50    | < 0.005 | 0.05    | 0.05    | — | 7.63  | 7.63  | < 0.005 | < 0.005 | < 0.005 | 8.07  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.45    | 1.47    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.09    | 0.09    | < 0.005 | 0.01    | 0.01    | — | 1.26  | 1.26  | < 0.005 | < 0.005 | < 0.005 | 1.34  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.59    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | < 0.005 | 0.45    | 169   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | 0.05    | 28.3  |
| Hauling                     | 0.24    | 0.02    | 1.62    | 1.66    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,113 | 1,113 | 0.21    | 0.18    | 1.68    | 1,174 |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.05    | 0.05    | 0.04    | 0.54    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159   | 159   | < 0.005 | 0.01    | 0.01    | 161   |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | < 0.005 | 28.2  |
| Hauling             | 0.24    | 0.02    | 1.71    | 1.66    | 0.01    | 0.01    | 0.29    | 0.30    | 0.01    | 0.08    | 0.10    | — | 1,113 | 1,113 | 0.21    | 0.18    | 0.04    | 1,172 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.04    | 0.03    | 0.03    | 0.37    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114   | 114   | < 0.005 | < 0.005 | 0.14    | 114   |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2  | 19.2  | < 0.005 | < 0.005 | 0.01    | 20.2  |
| Hauling             | 0.17    | 0.02    | 1.20    | 1.19    | < 0.005 | 0.01    | 0.21    | 0.22    | 0.01    | 0.06    | 0.07    | — | 795   | 795   | 0.15    | 0.13    | 0.52    | 838   |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9  | 18.9  | < 0.005 | < 0.005 | 0.02    | 18.9  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19  | 3.19  | < 0.005 | < 0.005 | < 0.005 | 3.34  |
| Hauling             | 0.03    | < 0.005 | 0.22    | 0.22    | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 132   | 132   | 0.02    | 0.02    | 0.09    | 139   |

3.17. Grading - initial soil improvement (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment          | 1.89 | 1.58 | 14.5 | 16.9 | 0.04 | 0.54  | —     | 0.54  | 0.49   | —      | 0.49   | —    | 3,651 | 3,651 | 0.15 | 0.03 | — | 3,664 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | 0.21  | 0.21  | —      | 0.02   | 0.02   | —    | —     | —     | —    | —    | — | —     |

|                             |         |         |      |      |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck                | 0.01    | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11 | 1.11 | < 0.005 | 0.11    | 0.11    | — | 17.3  | 17.3  | 0.01    | < 0.005 | 0.02    | 18.3  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 1.89    | 1.58    | 14.5 | 16.9 | 0.04    | 0.54    | —    | 0.54 | 0.49    | —       | 0.49    | — | 3,651 | 3,651 | 0.15    | 0.03    | —       | 3,664 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.21 | 0.21 | —       | 0.02    | 0.02    | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.07 | 0.05 | < 0.005 | < 0.005 | 1.11 | 1.11 | < 0.005 | 0.11    | 0.11    | — | 17.2  | 17.2  | 0.01    | < 0.005 | < 0.005 | 18.2  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 1.35    | 1.13    | 10.4 | 12.0 | 0.03    | 0.38    | —    | 0.38 | 0.35    | —       | 0.35    | — | 2,608 | 2,608 | 0.11    | 0.02    | —       | 2,617 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.15 | 0.15 | —       | 0.02    | 0.02    | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.05 | 0.03 | < 0.005 | < 0.005 | 0.75 | 0.75 | < 0.005 | 0.08    | 0.08    | — | 12.3  | 12.3  | < 0.005 | < 0.005 | 0.01    | 13.0  |
| Annual                      | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.25    | 0.21    | 1.89 | 2.20 | < 0.005 | 0.07    | —    | 0.07 | 0.06    | —       | 0.06    | — | 432   | 432   | 0.02    | < 0.005 | —       | 433   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.03 | 0.03 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14 | 0.14 | < 0.005 | 0.01    | 0.01    | — | 2.04  | 2.04  | < 0.005 | < 0.005 | < 0.005 | 2.16  |

|                     |      |      |      |      |         |         |      |      |         |         |         |   |       |       |         |         |      |       |
|---------------------|------|------|------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Offsite             | —    | —    | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.06 | 0.05 | 0.04 | 0.69 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 177   | 177   | < 0.005 | < 0.005 | 0.62 | 178   |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.54 | 0.06 | 3.71 | 3.21 | 0.02    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,212 | 2,212 | 0.47    | 0.36    | 3.97 | 2,336 |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.06 | 0.05 | 0.04 | 0.63 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | 0.01    | 0.02 | 170   |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.54 | 0.06 | 3.91 | 3.21 | 0.02    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,212 | 2,212 | 0.47    | 0.36    | 0.10 | 2,332 |
| Average Daily       | —    | —    | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.04 | 0.04 | 0.03 | 0.44 | 0.00    | 0.00    | 0.12 | 0.12 | 0.00    | 0.03    | 0.03    | — | 120   | 120   | < 0.005 | < 0.005 | 0.19 | 122   |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.39 | 0.04 | 2.75 | 2.29 | 0.02    | 0.02    | 0.37 | 0.39 | 0.02    | 0.11    | 0.12    | — | 1,580 | 1,580 | 0.34    | 0.26    | 1.23 | 1,667 |
| Annual              | —    | —    | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.01 | 0.01 | 0.01 | 0.08 | 0.00    | 0.00    | 0.02 | 0.02 | 0.00    | < 0.005 | < 0.005 | — | 19.9  | 19.9  | < 0.005 | < 0.005 | 0.03 | 20.1  |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.07 | 0.01 | 0.50 | 0.42 | < 0.005 | < 0.005 | 0.07 | 0.07 | < 0.005 | 0.02    | 0.02    | — | 262   | 262   | 0.06    | 0.04    | 0.20 | 276   |

3.18. Grading - initial soil improvement (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |         |      |      |         |         |      |      |         |      |      |   |       |       |         |         |         |       |
|-----------------------------|------|---------|------|------|---------|---------|------|------|---------|------|------|---|-------|-------|---------|---------|---------|-------|
| Off-Road                    | 0.66 | 0.60    | 4.92 | 21.2 | 0.04    | 0.14    | —    | 0.14 | 0.14    | —    | 0.14 | — | 3,651 | 3,651 | 0.15    | 0.03    | —       | 3,664 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.21 | 0.21 | —       | 0.02 | 0.02 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11 | 1.11 | < 0.005 | 0.11 | 0.11 | — | 17.3  | 17.3  | 0.01    | < 0.005 | 0.02    | 18.3  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.66 | 0.60    | 4.92 | 21.2 | 0.04    | 0.14    | —    | 0.14 | 0.14    | —    | 0.14 | — | 3,651 | 3,651 | 0.15    | 0.03    | —       | 3,664 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.21 | 0.21 | —       | 0.02 | 0.02 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.07 | 0.05 | < 0.005 | < 0.005 | 1.11 | 1.11 | < 0.005 | 0.11 | 0.11 | — | 17.2  | 17.2  | 0.01    | < 0.005 | < 0.005 | 18.2  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.47 | 0.43    | 3.51 | 15.1 | 0.03    | 0.10    | —    | 0.10 | 0.10    | —    | 0.10 | — | 2,608 | 2,608 | 0.11    | 0.02    | —       | 2,617 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.15 | 0.15 | —       | 0.02 | 0.02 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.05 | 0.03 | < 0.005 | < 0.005 | 0.75 | 0.75 | < 0.005 | 0.08 | 0.08 | — | 12.3  | 12.3  | < 0.005 | < 0.005 | 0.01    | 13.0  |
| Annual                      | —    | —       | —    | —    | —       | —       | —    | —    | —       | —    | —    | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.09 | 0.08    | 0.64 | 2.76 | < 0.005 | 0.02    | —    | 0.02 | 0.02    | —    | 0.02 | — | 432   | 432   | 0.02    | < 0.005 | —       | 433   |



|                             |         |         |      |      |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.03 | 0.03 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14 | 0.14 | < 0.005 | 0.01    | 0.01    | — | 2.04  | 2.04  | < 0.005 | < 0.005 | < 0.005 | 2.16  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.69 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 177   | 177   | < 0.005 | < 0.005 | 0.62    | 178   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.54    | 0.06    | 3.71 | 3.21 | 0.02    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,212 | 2,212 | 0.47    | 0.36    | 3.97    | 2,336 |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.63 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | 0.01    | 0.02    | 170   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.54    | 0.06    | 3.91 | 3.21 | 0.02    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,212 | 2,212 | 0.47    | 0.36    | 0.10    | 2,332 |
| Average Daily               | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.44 | 0.00    | 0.00    | 0.12 | 0.12 | 0.00    | 0.03    | 0.03    | — | 120   | 120   | < 0.005 | < 0.005 | 0.19    | 122   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.39    | 0.04    | 2.75 | 2.29 | 0.02    | 0.02    | 0.37 | 0.39 | 0.02    | 0.11    | 0.12    | — | 1,580 | 1,580 | 0.34    | 0.26    | 1.23    | 1,667 |
| Annual                      | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.01    | 0.01    | 0.01 | 0.08 | 0.00    | 0.00    | 0.02 | 0.02 | 0.00    | < 0.005 | < 0.005 | — | 19.9  | 19.9  | < 0.005 | < 0.005 | 0.03    | 20.1  |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.07    | 0.01    | 0.50 | 0.42 | < 0.005 | < 0.005 | 0.07 | 0.07 | < 0.005 | 0.02    | 0.02    | — | 262   | 262   | 0.06    | 0.04    | 0.20    | 276   |

### 3.19. Grading - initial soil improvement (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R       | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|------|---------|---------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 1.84 | 1.54    | 13.9 | 16.8 | 0.04    | 0.50    | —     | 0.50  | 0.46    | —      | 0.46   | —    | 3,650 | 3,650 | 0.15 | 0.03    | —       | 3,663 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.21  | 0.21  | —       | 0.02   | 0.02   | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11  | 1.11  | < 0.005 | 0.11   | 0.11   | —    | 16.9  | 16.9  | 0.01 | < 0.005 | 0.02    | 17.9  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 1.84 | 1.54    | 13.9 | 16.8 | 0.04    | 0.50    | —     | 0.50  | 0.46    | —      | 0.46   | —    | 3,650 | 3,650 | 0.15 | 0.03    | —       | 3,663 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.21  | 0.21  | —       | 0.02   | 0.02   | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11  | 1.11  | < 0.005 | 0.11   | 0.11   | —    | 16.8  | 16.8  | 0.01 | < 0.005 | < 0.005 | 17.8  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 1.32 | 1.10    | 9.92 | 12.0 | 0.03    | 0.35    | —     | 0.35  | 0.33    | —      | 0.33   | —    | 2,607 | 2,607 | 0.11 | 0.02    | —       | 2,616 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.15  | 0.15  | —       | 0.02   | 0.02   | —    | —     | —     | —    | —       | —       | —     |

|                             |         |         |         |      |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck                | 0.01    | < 0.005 | 0.04    | 0.03 | < 0.005 | < 0.005 | 0.75 | 0.75 | < 0.005 | 0.08    | 0.08    | — | 12.1  | 12.1  | < 0.005 | < 0.005 | 0.01    | 12.8  |
| Annual                      | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.24    | 0.20    | 1.81    | 2.19 | < 0.005 | 0.06    | —    | 0.06 | 0.06    | —       | 0.06    | — | 432   | 432   | 0.02    | < 0.005 | —       | 433   |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | 0.03 | 0.03 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01    | 0.01 | < 0.005 | < 0.005 | 0.14 | 0.14 | < 0.005 | 0.01    | 0.01    | — | 2.00  | 2.00  | < 0.005 | < 0.005 | < 0.005 | 2.11  |
| Offsite                     | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04    | 0.66 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 174   | 174   | < 0.005 | < 0.005 | 0.56    | 175   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.51    | 0.06    | 3.45    | 3.15 | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,149 | 2,149 | 0.45    | 0.35    | 3.66    | 2,268 |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04    | 0.60 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 165   | 165   | < 0.005 | 0.01    | 0.01    | 167   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.50    | 0.06    | 3.64    | 3.15 | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,148 | 2,148 | 0.45    | 0.35    | 0.09    | 2,264 |
| Average Daily               | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.41 | 0.00    | 0.00    | 0.12 | 0.12 | 0.00    | 0.03    | 0.03    | — | 118   | 118   | < 0.005 | < 0.005 | 0.17    | 119   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.36    | 0.04    | 2.57    | 2.26 | 0.01    | 0.02    | 0.37 | 0.39 | 0.02    | 0.11    | 0.12    | — | 1,535 | 1,535 | 0.32    | 0.25    | 1.13    | 1,618 |
| Annual                      | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.08 | 0.00    | 0.00    | 0.02 | 0.02 | 0.00    | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.03    | 19.8  |

|         |      |      |      |      |         |         |      |      |         |      |      |   |      |      |      |      |      |      |
|---------|------|------|------|------|---------|---------|------|------|---------|------|------|---|------|------|------|------|------|------|
| Vendor  | 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 | 0.00 |
| Hauling | 0.07 | 0.01 | 0.47 | 0.41 | < 0.005 | < 0.005 | 0.07 | 0.07 | < 0.005 | 0.02 | 0.02 | — | 254  | 254  | 0.05 | 0.04 | 0.19 | 268  |

3.20. Grading - initial soil improvement (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R       | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|------|---------|---------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipm ent         | 0.65 | 0.60    | 4.91 | 21.2 | 0.04    | 0.14    | —     | 0.14  | 0.14    | —      | 0.14   | —    | 3,650 | 3,650 | 0.15 | 0.03    | —       | 3,663 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.21  | 0.21  | —       | 0.02   | 0.02   | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11  | 1.11  | < 0.005 | 0.11   | 0.11   | —    | 16.9  | 16.9  | 0.01 | < 0.005 | 0.02    | 17.9  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipm ent         | 0.65 | 0.60    | 4.91 | 21.2 | 0.04    | 0.14    | —     | 0.14  | 0.14    | —      | 0.14   | —    | 3,650 | 3,650 | 0.15 | 0.03    | —       | 3,663 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.21  | 0.21  | —       | 0.02   | 0.02   | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11  | 1.11  | < 0.005 | 0.11   | 0.11   | —    | 16.8  | 16.8  | 0.01 | < 0.005 | < 0.005 | 17.8  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —       | —     |

|                             |         |         |      |      |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.47    | 0.43    | 3.51 | 15.1 | 0.03    | 0.10    | —    | 0.10 | 0.10    | —       | 0.10    | — | 2,607 | 2,607 | 0.11    | 0.02    | —       | 2,616 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.15 | 0.15 | —       | 0.02    | 0.02    | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.75 | 0.75 | < 0.005 | 0.08    | 0.08    | — | 12.1  | 12.1  | < 0.005 | < 0.005 | 0.01    | 12.8  |
| Annual                      | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.09    | 0.08    | 0.64 | 2.76 | < 0.005 | 0.02    | —    | 0.02 | 0.02    | —       | 0.02    | — | 432   | 432   | 0.02    | < 0.005 | —       | 433   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.03 | 0.03 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14 | 0.14 | < 0.005 | 0.01    | 0.01    | — | 2.00  | 2.00  | < 0.005 | < 0.005 | < 0.005 | 2.11  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.66 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 174   | 174   | < 0.005 | < 0.005 | 0.56    | 175   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.51    | 0.06    | 3.45 | 3.15 | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,149 | 2,149 | 0.45    | 0.35    | 3.66    | 2,268 |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.60 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 165   | 165   | < 0.005 | 0.01    | 0.01    | 167   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.50    | 0.06    | 3.64 | 3.15 | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,148 | 2,148 | 0.45    | 0.35    | 0.09    | 2,264 |
| Average Daily               | —       | —       | —    | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03 | 0.41 | 0.00    | 0.00    | 0.12 | 0.12 | 0.00    | 0.03    | 0.03    | — | 118   | 118   | < 0.005 | < 0.005 | 0.17    | 119   |

|         |      |      |         |      |         |         |      |      |         |         |         |   |       |       |         |         |      |       |
|---------|------|------|---------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Vendor  | 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 | 0.00  |
| Hauling | 0.36 | 0.04 | 2.57    | 2.26 | 0.01    | 0.02    | 0.37 | 0.39 | 0.02    | 0.11    | 0.12    | — | 1,535 | 1,535 | 0.32    | 0.25    | 1.13 | 1,618 |
| Annual  | —    | —    | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker  | 0.01 | 0.01 | < 0.005 | 0.08 | 0.00    | 0.00    | 0.02 | 0.02 | 0.00    | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.03 | 19.8  |
| Vendor  | 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 | 0.00  |
| Hauling | 0.07 | 0.01 | 0.47    | 0.41 | < 0.005 | < 0.005 | 0.07 | 0.07 | < 0.005 | 0.02    | 0.02    | — | 254   | 254   | 0.05    | 0.04    | 0.19 | 268   |

### 3.21. Grading - initial soil improvement (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R    | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|------|---------|------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 1.79 | 1.50    | 13.3 | 16.8 | 0.04    | 0.46    | —     | 0.46  | 0.42    | —      | 0.42   | —    | 3,650 | 3,650 | 0.15 | 0.03    | —    | 3,663 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | 0.21  | 0.21  | —       | 0.02   | 0.02   | —    | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11  | 1.11  | < 0.005 | 0.11   | 0.11   | —    | 16.5  | 16.5  | 0.01 | < 0.005 | 0.02 | 17.4  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 1.79 | 1.50    | 13.3 | 16.8 | 0.04    | 0.46    | —     | 0.46  | 0.42    | —      | 0.42   | —    | 3,650 | 3,650 | 0.15 | 0.03    | —    | 3,663 |

|                             |         |         |         |         |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.21 | 0.21 | —       | 0.02    | 0.02    | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.06    | 0.05    | < 0.005 | < 0.005 | 1.11 | 1.11 | < 0.005 | 0.11    | 0.11    | — | 16.4  | 16.4  | 0.01    | < 0.005 | < 0.005 | 17.4  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.75    | 0.63    | 5.53    | 6.99    | 0.01    | 0.19    | —    | 0.19 | 0.18    | —       | 0.18    | — | 1,521 | 1,521 | 0.06    | 0.01    | —       | 1,527 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.09 | 0.09 | —       | 0.01    | 0.01    | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.44 | 0.44 | < 0.005 | 0.04    | 0.04    | — | 6.86  | 6.86  | < 0.005 | < 0.005 | < 0.005 | 7.26  |
| Annual                      | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.14    | 0.11    | 1.01    | 1.28    | < 0.005 | 0.03    | —    | 0.03 | 0.03    | —       | 0.03    | — | 252   | 252   | 0.01    | < 0.005 | —       | 253   |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.02 | 0.02 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.08 | 0.08 | < 0.005 | 0.01    | 0.01    | — | 1.14  | 1.14  | < 0.005 | < 0.005 | < 0.005 | 1.20  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.62    | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 171   | 171   | < 0.005 | < 0.005 | 0.50    | 172   |
| Vendor                      | 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    | 0.00  |
| Hauling                     | 0.47    | 0.04    | 3.19    | 3.08    | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,077 | 2,077 | 0.41    | 0.34    | 3.35    | 2,192 |



|                     |         |         |         |      |         |         |      |      |         |         |         |   |       |       |         |         |      |       |
|---------------------|---------|---------|---------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.05    | 0.05    | 0.04    | 0.57 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | 0.01    | 0.01 | 164   |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.47    | 0.04    | 3.38    | 3.09 | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,077 | 2,077 | 0.41    | 0.34    | 0.09 | 2,188 |
| Average Daily       | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.02    | 0.02    | 0.02    | 0.23 | 0.00    | 0.00    | 0.07 | 0.07 | 0.00    | 0.02    | 0.02    | — | 67.6  | 67.6  | < 0.005 | < 0.005 | 0.09 | 67.9  |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.20    | 0.02    | 1.39    | 1.29 | < 0.005 | 0.01    | 0.22 | 0.23 | 0.01    | 0.06    | 0.07    | — | 866   | 866   | 0.17    | 0.14    | 0.60 | 913   |
| Annual              | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.00    | 0.00    | 0.01 | 0.01 | 0.00    | < 0.005 | < 0.005 | — | 11.2  | 11.2  | < 0.005 | < 0.005 | 0.01 | 11.2  |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.04    | < 0.005 | 0.25    | 0.23 | < 0.005 | < 0.005 | 0.04 | 0.04 | < 0.005 | 0.01    | 0.01    | — | 143   | 143   | 0.03    | 0.02    | 0.10 | 151   |

3.22. Grading - initial soil improvement (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment          | 0.65 | 0.60 | 4.90 | 21.2 | 0.04 | 0.14  | —     | 0.14  | 0.14   | —      | 0.14   | —    | 3,650 | 3,650 | 0.15 | 0.03 | — | 3,663 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | 0.21  | 0.21  | —      | 0.02   | 0.02   | —    | —     | —     | —    | —    | — | —     |

|                             |         |         |         |         |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck                | 0.01    | < 0.005 | 0.06    | 0.05    | < 0.005 | < 0.005 | 1.11 | 1.11 | < 0.005 | 0.11    | 0.11    | — | 16.5  | 16.5  | 0.01    | < 0.005 | 0.02    | 17.4  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.65    | 0.60    | 4.90    | 21.2    | 0.04    | 0.14    | —    | 0.14 | 0.14    | —       | 0.14    | — | 3,650 | 3,650 | 0.15    | 0.03    | —       | 3,663 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.21 | 0.21 | —       | 0.02    | 0.02    | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.06    | 0.05    | < 0.005 | < 0.005 | 1.11 | 1.11 | < 0.005 | 0.11    | 0.11    | — | 16.4  | 16.4  | 0.01    | < 0.005 | < 0.005 | 17.4  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.27    | 0.25    | 2.04    | 8.82    | 0.01    | 0.06    | —    | 0.06 | 0.06    | —       | 0.06    | — | 1,521 | 1,521 | 0.06    | 0.01    | —       | 1,527 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.09 | 0.09 | —       | 0.01    | 0.01    | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.44 | 0.44 | < 0.005 | 0.04    | 0.04    | — | 6.86  | 6.86  | < 0.005 | < 0.005 | < 0.005 | 7.26  |
| Annual                      | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.05    | 0.05    | 0.37    | 1.61    | < 0.005 | 0.01    | —    | 0.01 | 0.01    | —       | 0.01    | — | 252   | 252   | 0.01    | < 0.005 | —       | 253   |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.02 | 0.02 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.08 | 0.08 | < 0.005 | 0.01    | 0.01    | — | 1.14  | 1.14  | < 0.005 | < 0.005 | < 0.005 | 1.20  |

|                     |         |         |         |      |         |         |      |      |         |         |         |   |       |       |         |         |      |       |
|---------------------|---------|---------|---------|------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Offsite             | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.05    | 0.05    | 0.03    | 0.62 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 171   | 171   | < 0.005 | < 0.005 | 0.50 | 172   |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.47    | 0.04    | 3.19    | 3.08 | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,077 | 2,077 | 0.41    | 0.34    | 3.35 | 2,192 |
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.05    | 0.05    | 0.04    | 0.57 | 0.00    | 0.00    | 0.17 | 0.17 | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | 0.01    | 0.01 | 164   |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.47    | 0.04    | 3.38    | 3.09 | 0.01    | 0.02    | 0.52 | 0.55 | 0.02    | 0.15    | 0.17    | — | 2,077 | 2,077 | 0.41    | 0.34    | 0.09 | 2,188 |
| Average Daily       | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.02    | 0.02    | 0.02    | 0.23 | 0.00    | 0.00    | 0.07 | 0.07 | 0.00    | 0.02    | 0.02    | — | 67.6  | 67.6  | < 0.005 | < 0.005 | 0.09 | 67.9  |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.20    | 0.02    | 1.39    | 1.29 | < 0.005 | 0.01    | 0.22 | 0.23 | 0.01    | 0.06    | 0.07    | — | 866   | 866   | 0.17    | 0.14    | 0.60 | 913   |
| Annual              | —       | —       | —       | —    | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.00    | 0.00    | 0.01 | 0.01 | 0.00    | < 0.005 | < 0.005 | — | 11.2  | 11.2  | < 0.005 | < 0.005 | 0.01 | 11.2  |
| Vendor              | 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 | 0.00  |
| Hauling             | 0.04    | < 0.005 | 0.25    | 0.23 | < 0.005 | < 0.005 | 0.04 | 0.04 | < 0.005 | 0.01    | 0.01    | — | 143   | 143   | 0.03    | 0.02    | 0.10 | 151   |

3.23. Grading - initial trenchless (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                     |      |      |      |      |         |      |      |      |      |      |      |   |       |       |         |         |      |       |
|---------------------|------|------|------|------|---------|------|------|------|------|------|------|---|-------|-------|---------|---------|------|-------|
| Off-Road            | 0.69 | 0.58 | 5.56 | 7.28 | 0.01    | 0.22 | —    | 0.22 | 0.20 | —    | 0.20 | — | 1,355 | 1,355 | 0.05    | 0.01    | —    | 1,360 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.69 | 0.58 | 5.56 | 7.28 | 0.01    | 0.22 | —    | 0.22 | 0.20 | —    | 0.20 | — | 1,355 | 1,355 | 0.05    | 0.01    | —    | 1,360 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.49 | 0.41 | 3.97 | 5.20 | 0.01    | 0.16 | —    | 0.16 | 0.15 | —    | 0.15 | — | 968   | 968   | 0.04    | 0.01    | —    | 971   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.09 | 0.08 | 0.72 | 0.95 | < 0.005 | 0.03 | —    | 0.03 | 0.03 | —    | 0.03 | — | 160   | 160   | 0.01    | < 0.005 | —    | 161   |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.03 | 0.03 | 0.02 | 0.42 | 0.00    | 0.00 | 0.10 | 0.10 | 0.00 | 0.02 | 0.02 | — | 106   | 106   | < 0.005 | < 0.005 | 0.37 | 107   |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |

|                     |         |         |         |      |      |      |      |      |      |         |         |   |      |      |         |         |      |      |
|---------------------|---------|---------|---------|------|------|------|------|------|------|---------|---------|---|------|------|---------|---------|------|------|
| Daily, Winter (Max) | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.03    | 0.03    | 0.03    | 0.38 | 0.00 | 0.00 | 0.10 | 0.10 | 0.00 | 0.02    | 0.02    | — | 101  | 101  | < 0.005 | < 0.005 | 0.01 | 102  |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Average Daily       | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.02    | 0.02    | 0.02    | 0.26 | 0.00 | 0.00 | 0.07 | 0.07 | 0.00 | 0.02    | 0.02    | — | 72.0 | 72.0 | < 0.005 | < 0.005 | 0.11 | 72.9 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Annual              | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.05 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 11.9 | 11.9 | < 0.005 | < 0.005 | 0.02 | 12.1 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |

3.24. Grading - initial trenchless (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite              | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent | 0.14 | 0.14 | 1.35 | 8.52 | 0.01 | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,355 | 1,355 | 0.05 | 0.01 | —    | 1,360 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |

|                     |      |      |      |      |         |         |      |         |         |      |         |   |       |       |         |         |      |       |
|---------------------|------|------|------|------|---------|---------|------|---------|---------|------|---------|---|-------|-------|---------|---------|------|-------|
| Off-Road Equipment  | 0.14 | 0.14 | 1.35 | 8.52 | 0.01    | 0.03    | —    | 0.03    | 0.03    | —    | 0.03    | — | 1,355 | 1,355 | 0.05    | 0.01    | —    | 1,360 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.10 | 0.10 | 0.96 | 6.08 | 0.01    | 0.02    | —    | 0.02    | 0.02    | —    | 0.02    | — | 968   | 968   | 0.04    | 0.01    | —    | 971   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.02 | 0.02 | 0.18 | 1.11 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —    | < 0.005 | — | 160   | 160   | 0.01    | < 0.005 | —    | 161   |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.03 | 0.03 | 0.02 | 0.42 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02 | 0.02    | — | 106   | 106   | < 0.005 | < 0.005 | 0.37 | 107   |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.03 | 0.03 | 0.03 | 0.38 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02 | 0.02    | — | 101   | 101   | < 0.005 | < 0.005 | 0.01 | 102   |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |

|         |         |         |         |      |      |      |      |      |      |         |         |   |      |      |         |         |      |      |
|---------|---------|---------|---------|------|------|------|------|------|------|---------|---------|---|------|------|---------|---------|------|------|
| Worker  | 0.02    | 0.02    | 0.02    | 0.26 | 0.00 | 0.00 | 0.07 | 0.07 | 0.00 | 0.02    | 0.02    | — | 72.0 | 72.0 | < 0.005 | < 0.005 | 0.11 | 72.9 |
| Vendor  | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual  | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | 0.05 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 11.9 | 11.9 | < 0.005 | < 0.005 | 0.02 | 12.1 |
| Vendor  | 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 | 0.00 |
| Hauling | 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 | 0.00 |

3.25. Grading - initial trenchless (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite              | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment  | 0.66 | 0.55 | 5.27 | 7.26 | 0.01 | 0.20  | —     | 0.20  | 0.18   | —      | 0.18   | —    | 1,355 | 1,355 | 0.05 | 0.01 | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment  | 0.66 | 0.55 | 5.27 | 7.26 | 0.01 | 0.20  | —     | 0.20  | 0.18   | —      | 0.18   | —    | 1,355 | 1,355 | 0.05 | 0.01 | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |



|                     |         |         |         |      |         |      |      |      |      |         |         |   |      |      |         |         |      |       |
|---------------------|---------|---------|---------|------|---------|------|------|------|------|---------|---------|---|------|------|---------|---------|------|-------|
| Off-Road            | 0.23    | 0.19    | 1.87    | 2.57 | < 0.005 | 0.07 | —    | 0.07 | 0.06 | —       | 0.06    | — | 480  | 480  | 0.02    | < 0.005 | —    | 481   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment  | 0.04    | 0.04    | 0.34    | 0.47 | < 0.005 | 0.01 | —    | 0.01 | 0.01 | —       | 0.01    | — | 79.4 | 79.4 | < 0.005 | < 0.005 | —    | 79.7  |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Daily, Summer (Max) | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | 0.03    | 0.03    | 0.02    | 0.39 | 0.00    | 0.00 | 0.10 | 0.10 | 0.00 | 0.02    | 0.02    | — | 104  | 104  | < 0.005 | < 0.005 | 0.33 | 105   |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | 0.03    | 0.03    | 0.03    | 0.36 | 0.00    | 0.00 | 0.10 | 0.10 | 0.00 | 0.02    | 0.02    | — | 98.8 | 98.8 | < 0.005 | < 0.005 | 0.01 | 100.0 |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Average Daily       | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | 0.01    | 0.01    | 0.01    | 0.12 | 0.00    | 0.00 | 0.03 | 0.03 | 0.00 | 0.01    | 0.01    | — | 35.0 | 35.0 | < 0.005 | < 0.005 | 0.05 | 35.5  |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Annual              | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02 | 0.00    | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 5.80 | 5.80 | < 0.005 | < 0.005 | 0.01 | 5.88  |
| Vendor              | 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 | 0.00  |

|         |      |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|
| Hauling | 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 | 0.00 |
|---------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|

3.26. Grading - initial trenchless (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R    | CO2e  |
|---------------------|------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|---------|------|-------|
| Onsite              | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment  | 0.14 | 0.14 | 1.35 | 8.52 | 0.01    | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,355 | 1,355 | 0.05 | 0.01    | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment  | 0.14 | 0.14 | 1.35 | 8.52 | 0.01    | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,355 | 1,355 | 0.05 | 0.01    | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment  | 0.05 | 0.05 | 0.48 | 3.02 | < 0.005 | 0.01  | —     | 0.01  | 0.01   | —      | 0.01   | —    | 480   | 480   | 0.02 | < 0.005 | —    | 481   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |

|                     |         |         |         |      |         |         |      |         |         |         |         |   |      |      |         |         |      |       |
|---------------------|---------|---------|---------|------|---------|---------|------|---------|---------|---------|---------|---|------|------|---------|---------|------|-------|
| Off-Road Equipm     | 0.01    | 0.01    | 0.09    | 0.55 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —       | < 0.005 | — | 79.4 | 79.4 | < 0.005 | < 0.005 | —    | 79.7  |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Daily, Summer (Max) | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | 0.03    | 0.03    | 0.02    | 0.39 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02    | 0.02    | — | 104  | 104  | < 0.005 | < 0.005 | 0.33 | 105   |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | 0.03    | 0.03    | 0.03    | 0.36 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02    | 0.02    | — | 98.8 | 98.8 | < 0.005 | < 0.005 | 0.01 | 100.0 |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Average Daily       | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | 0.01    | 0.01    | 0.01    | 0.12 | 0.00    | 0.00    | 0.03 | 0.03    | 0.00    | 0.01    | 0.01    | — | 35.0 | 35.0 | < 0.005 | < 0.005 | 0.05 | 35.5  |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Annual              | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02 | 0.00    | 0.00    | 0.01 | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 5.80 | 5.80 | < 0.005 | < 0.005 | 0.01 | 5.88  |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |

3.27. Grading - pipeline abandonment (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 1.24    | 1.03    | 8.90    | 10.8    | 0.02    | 0.31    | —       | 0.31    | 0.29    | —       | 0.29    | — | 1,597 | 1,597 | 0.06    | 0.01    | —       | 1,603 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.01    | 0.01    | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.5  | 11.5  | < 0.005 | < 0.005 | < 0.005 | 12.1  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.05    | 0.04    | 0.34    | 0.41    | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 61.3  | 61.3  | < 0.005 | < 0.005 | —       | 61.5  |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | < 0.005 | — | 0.44  | 0.44  | < 0.005 | < 0.005 | < 0.005 | 0.47  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.01    | 0.01    | 0.06    | 0.08    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 10.1  | 10.1  | < 0.005 | < 0.005 | —       | 10.2  |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.07  | 0.07  | < 0.005 | < 0.005 | < 0.005 | 0.08  |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.03    | 0.03    | 0.02    | 0.32    | 0.00    | 0.00    | 0.08    | 0.08    | 0.00    | 0.02    | 0.02    | — | 83.8  | 83.8  | < 0.005 | < 0.005 | 0.01    | 84.8  |
| Vendor              | 0.02    | < 0.005 | 0.20    | 0.13    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 118   | 118   | 0.02    | 0.02    | 0.01    | 124   |
| Hauling             | 0.75    | 0.08    | 5.43    | 4.46    | 0.03    | 0.03    | 0.73    | 0.76    | 0.03    | 0.21    | 0.24    | — | 3,072 | 3,072 | 0.66    | 0.50    | 0.14    | 3,238 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 3.22  | 3.22  | < 0.005 | < 0.005 | 0.01    | 3.26  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.52  | 4.52  | < 0.005 | < 0.005 | < 0.005 | 4.75  |
| Hauling             | 0.03    | < 0.005 | 0.21    | 0.17    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 118   | 118   | 0.03    | 0.02    | 0.09    | 124   |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 0.53  | 0.53  | < 0.005 | < 0.005 | < 0.005 | 0.54  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.75  | 0.75  | < 0.005 | < 0.005 | < 0.005 | 0.79  |
| Hauling             | 0.01    | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.02    | 20.6  |

3.28. Grading - pipeline abandonment (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.44    | 0.39    | 5.62    | 10.9    | 0.02    | 0.09    | —       | 0.09    | 0.09    | —       | 0.09    | — | 1,597 | 1,597 | 0.06    | 0.01    | —       | 1,603 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.01    | 0.01    | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.74    | 0.74    | < 0.005 | 0.07    | 0.07    | — | 11.5  | 11.5  | < 0.005 | < 0.005 | < 0.005 | 12.1  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.02    | 0.01    | 0.22    | 0.42    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 61.3  | 61.3  | < 0.005 | < 0.005 | —       | 61.5  |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | < 0.005 | — | 0.44  | 0.44  | < 0.005 | < 0.005 | < 0.005 | 0.47  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | < 0.005 | < 0.005 | 0.04    | 0.08    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 10.1  | 10.1  | < 0.005 | < 0.005 | —       | 10.2  |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.07  | 0.07  | < 0.005 | < 0.005 | < 0.005 | 0.08  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.03    | 0.03    | 0.02    | 0.32    | 0.00    | 0.00    | 0.08    | 0.08    | 0.00    | 0.02    | 0.02    | — | 83.8  | 83.8  | < 0.005 | < 0.005 | 0.01    | 84.8  |
| Vendor              | 0.02    | < 0.005 | 0.20    | 0.13    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 118   | 118   | 0.02    | 0.02    | 0.01    | 124   |
| Hauling             | 0.75    | 0.08    | 5.43    | 4.46    | 0.03    | 0.03    | 0.73    | 0.76    | 0.03    | 0.21    | 0.24    | — | 3,072 | 3,072 | 0.66    | 0.50    | 0.14    | 3,238 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 3.22  | 3.22  | < 0.005 | < 0.005 | 0.01    | 3.26  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.52  | 4.52  | < 0.005 | < 0.005 | < 0.005 | 4.75  |
| Hauling             | 0.03    | < 0.005 | 0.21    | 0.17    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 118   | 118   | 0.03    | 0.02    | 0.09    | 124   |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 0.53  | 0.53  | < 0.005 | < 0.005 | < 0.005 | 0.54  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.75  | 0.75  | < 0.005 | < 0.005 | < 0.005 | 0.79  |
| Hauling             | 0.01    | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.02    | 20.6  |

### 3.29. Grading - subseq pipes and vaults (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment          | 0.96 | 0.80 | 7.19 | 10.4 | 0.02 | 0.20  | —       | 0.20    | 0.19   | —       | 0.19    | —    | 1,749 | 1,749 | 0.07 | 0.01 | — | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |



|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.96 | 0.80 | 7.19 | 10.4 | 0.02    | 0.20 | —       | 0.20    | 0.19 | —       | 0.19    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.69 | 0.58 | 5.15 | 7.41 | 0.01    | 0.14 | —       | 0.14    | 0.13 | —       | 0.13    | — | 1,253 | 1,253 | 0.05 | 0.01    | —    | 1,257 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.13 | 0.11 | 0.94 | 1.35 | < 0.005 | 0.03 | —       | 0.03    | 0.02 | —       | 0.02    | — | 207   | 207   | 0.01 | < 0.005 | —    | 208   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.05    | 0.03    | 0.62    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171  | 171  | < 0.005 | < 0.005 | 0.50    | 172  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | 0.05    | 29.2 |
| Hauling             | 0.13    | 0.01    | 0.89    | 0.86    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 577  | 577  | 0.11    | 0.09    | 0.93    | 609  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.05    | 0.04    | 0.57    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162  | 162  | < 0.005 | 0.01    | 0.01    | 164  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | < 0.005 | 29.2 |
| Hauling             | 0.13    | 0.01    | 0.94    | 0.86    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 577  | 577  | 0.11    | 0.09    | 0.02    | 608  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.03    | 0.03    | 0.40    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116  | 116  | < 0.005 | < 0.005 | 0.15    | 117  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0 | 20.0 | < 0.005 | < 0.005 | 0.02    | 20.9 |
| Hauling             | 0.09    | 0.01    | 0.66    | 0.61    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 413  | 413  | 0.08    | 0.07    | 0.29    | 436  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.03    | 19.3 |
| Vendor              | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31 | 3.31 | < 0.005 | < 0.005 | < 0.005 | 3.46 |
| Hauling             | 0.02    | < 0.005 | 0.12    | 0.11    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 68.4 | 68.4 | 0.01    | 0.01    | 0.05    | 72.1 |

3.30. Grading - subseq pipes and vaults (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.14 | 0.14 | 2.45 | 8.06 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,253 | 1,253 | 0.05 | 0.01    | —    | 1,257 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.03 | 0.03 | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01 | < 0.005 | —    | 208   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.62    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171  | 171  | < 0.005 | < 0.005 | 0.50    | 172  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | 0.05    | 29.2 |
| Hauling                     | 0.13    | 0.01    | 0.89    | 0.86    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 577  | 577  | 0.11    | 0.09    | 0.93    | 609  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.04    | 0.57    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162  | 162  | < 0.005 | 0.01    | 0.01    | 164  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | < 0.005 | 29.2 |
| Hauling                     | 0.13    | 0.01    | 0.94    | 0.86    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 577  | 577  | 0.11    | 0.09    | 0.02    | 608  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.40    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116  | 116  | < 0.005 | < 0.005 | 0.15    | 117  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0 | 20.0 | < 0.005 | < 0.005 | 0.02    | 20.9 |
| Hauling                     | 0.09    | 0.01    | 0.66    | 0.61    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 413  | 413  | 0.08    | 0.07    | 0.29    | 436  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.03    | 19.3 |
| Vendor                      | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31 | 3.31 | < 0.005 | < 0.005 | < 0.005 | 3.46 |
| Hauling                     | 0.02    | < 0.005 | 0.12    | 0.11    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 68.4 | 68.4 | 0.01    | 0.01    | 0.05    | 72.1 |

3.31. Grading - subseq pipes and vaults (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.94 | 0.78 | 6.98 | 10.3 | 0.02 | 0.18  | —       | 0.18    | 0.17   | —       | 0.17    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.94 | 0.78 | 6.98 | 10.3 | 0.02 | 0.18  | —       | 0.18    | 0.17   | —       | 0.17    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.67 | 0.56 | 4.98 | 7.38 | 0.01 | 0.13  | —       | 0.13    | 0.12   | —       | 0.12    | —    | 1,249 | 1,249 | 0.05 | 0.01 | —    | 1,254 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.12    | 0.10    | 0.91    | 1.35 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 207  | 207  | 0.01    | < 0.005 | —       | 208  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.59 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168  | 168  | < 0.005 | < 0.005 | 0.45    | 169  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9 | 26.9 | < 0.005 | < 0.005 | 0.05    | 28.3 |
| Hauling                     | 0.12    | 0.01    | 0.81    | 0.83 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 556  | 556  | 0.10    | 0.09    | 0.84    | 587  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.04    | 0.54 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159  | 159  | < 0.005 | 0.01    | 0.01    | 161  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9 | 26.9 | < 0.005 | < 0.005 | < 0.005 | 28.2 |
| Hauling                     | 0.12    | 0.01    | 0.85    | 0.83 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 556  | 556  | 0.10    | 0.09    | 0.02    | 586  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.37 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114  | 114  | < 0.005 | < 0.005 | 0.14    | 114  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.01    | 20.2 |
| Hauling                     | 0.09    | 0.01    | 0.60    | 0.59 | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 397  | 397  | 0.07    | 0.06    | 0.26    | 419  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.02    | 18.9 |

|         |         |         |      |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19 | 3.19 | < 0.005 | < 0.005 | < 0.005 | 3.34 |
| Hauling | 0.02    | < 0.005 | 0.11 | 0.11    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 65.8 | 65.8 | 0.01    | 0.01    | 0.04    | 69.3 |

3.32. Grading - subsq pipes and vaults (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |



|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.14    | 0.14    | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,254 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03 | 0.59 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | < 0.005 | 0.45    | 169   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | 0.05    | 28.3  |
| Hauling                     | 0.12    | 0.01    | 0.81 | 0.83 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 556   | 556   | 0.10    | 0.09    | 0.84    | 587   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.04 | 0.54 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159   | 159   | < 0.005 | 0.01    | 0.01    | 161   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | < 0.005 | 28.2  |
| Hauling                     | 0.12    | 0.01    | 0.85 | 0.83 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 556   | 556   | 0.10    | 0.09    | 0.02    | 586   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03 | 0.37 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114   | 114   | < 0.005 | < 0.005 | 0.14    | 114   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.01    | 20.2 |
| Hauling | 0.09    | 0.01    | 0.60    | 0.59    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 397  | 397  | 0.07    | 0.06    | 0.26    | 419  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.02    | 18.9 |
| Vendor  | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19 | 3.19 | < 0.005 | < 0.005 | < 0.005 | 3.34 |
| Hauling | 0.02    | < 0.005 | 0.11    | 0.11    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 65.8 | 65.8 | 0.01    | 0.01    | 0.04    | 69.3 |

3.33. Grading - subseq pipes and vaults (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.90 | 0.75 | 6.86 | 10.3 | 0.02 | 0.17  | —       | 0.17    | 0.16   | —       | 0.16    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.90 | 0.75 | 6.86 | 10.3 | 0.02 | 0.17  | —       | 0.17    | 0.16   | —       | 0.16    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.64    | 0.54    | 4.90 | 7.36 | 0.01    | 0.12    | —       | 0.12    | 0.11    | —       | 0.11    | — | 1,249 | 1,249 | 0.05    | 0.01    | —    | 1,253 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.12    | 0.10    | 0.89 | 1.34 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 207   | 207   | 0.01    | < 0.005 | —    | 208   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker                      | 0.05    | 0.05    | 0.03 | 0.57 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 166   | 166   | < 0.005 | < 0.005 | 0.39 | 166   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0  | 26.0  | < 0.005 | < 0.005 | 0.04 | 27.3  |
| Hauling                     | 0.11    | 0.01    | 0.75 | 0.80 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 536   | 536   | 0.10    | 0.09    | 0.76 | 566   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.04    | 0.04    | 0.51    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 157  | 157  | < 0.005 | < 0.005 | 0.01    | 157  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling             | 0.11    | 0.01    | 0.80    | 0.81    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 536  | 536  | 0.10    | 0.09    | 0.02    | 565  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.36    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 112  | 112  | < 0.005 | < 0.005 | 0.12    | 113  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.01    | 19.4 |
| Hauling             | 0.08    | 0.01    | 0.56    | 0.58    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 383  | 383  | 0.07    | 0.06    | 0.24    | 404  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.02    | 18.6 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.07 | 3.07 | < 0.005 | < 0.005 | < 0.005 | 3.22 |
| Hauling             | 0.01    | < 0.005 | 0.10    | 0.10    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 63.4 | 63.4 | 0.01    | 0.01    | 0.04    | 66.8 |

3.34. Grading - subseq pipes and vaults (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | — | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.14 | 0.14 | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05 | 0.01    | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.03 | 0.03 | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01 | < 0.005 | —    | 208   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.05    | 0.03    | 0.57    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 166  | 166  | < 0.005 | < 0.005 | 0.39    | 166  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | 0.04    | 27.3 |
| Hauling             | 0.11    | 0.01    | 0.75    | 0.80    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 536  | 536  | 0.10    | 0.09    | 0.76    | 566  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.04    | 0.04    | 0.51    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 157  | 157  | < 0.005 | < 0.005 | 0.01    | 157  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling             | 0.11    | 0.01    | 0.80    | 0.81    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 536  | 536  | 0.10    | 0.09    | 0.02    | 565  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.36    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 112  | 112  | < 0.005 | < 0.005 | 0.12    | 113  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.01    | 19.4 |
| Hauling             | 0.08    | 0.01    | 0.56    | 0.58    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 383  | 383  | 0.07    | 0.06    | 0.24    | 404  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.02    | 18.6 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.07 | 3.07 | < 0.005 | < 0.005 | < 0.005 | 3.22 |
| Hauling             | 0.01    | < 0.005 | 0.10    | 0.10    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 63.4 | 63.4 | 0.01    | 0.01    | 0.04    | 66.8 |

3.35. Grading - subseq pipes and vaults (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.87 | 0.73 | 6.70 | 10.3 | 0.02    | 0.16 | —       | 0.16    | 0.14 | —       | 0.14    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.87 | 0.73 | 6.70 | 10.3 | 0.02    | 0.16 | —       | 0.16    | 0.14 | —       | 0.14    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.62 | 0.52 | 4.79 | 7.33 | 0.01    | 0.11 | —       | 0.11    | 0.10 | —       | 0.10    | — | 1,249 | 1,249 | 0.05 | 0.01    | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.11 | 0.09 | 0.87 | 1.34 | < 0.005 | 0.02 | —       | 0.02    | 0.02 | —       | 0.02    | — | 207   | 207   | 0.01 | < 0.005 | —    | 207   |



|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.55    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 164  | 164  | < 0.005 | < 0.005 | 0.35    | 165  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | 0.03    | 26.2 |
| Hauling                     | 0.10    | 0.01    | 0.71    | 0.78    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 517  | 517  | 0.09    | 0.08    | 0.68    | 545  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.50    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 155  | 155  | < 0.005 | < 0.005 | 0.01    | 156  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | < 0.005 | 26.2 |
| Hauling                     | 0.10    | 0.01    | 0.75    | 0.78    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 517  | 517  | 0.09    | 0.08    | 0.02    | 544  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.34    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 111  | 111  | < 0.005 | < 0.005 | 0.11    | 111  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.7 |
| Hauling                     | 0.07    | 0.01    | 0.53    | 0.56    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 369  | 369  | 0.06    | 0.06    | 0.21    | 389  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.4 | 18.4 | < 0.005 | < 0.005 | 0.02    | 18.4 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.96 | 2.96 | < 0.005 | < 0.005 | < 0.005 | 3.10 |
| Hauling                     | 0.01    | < 0.005 | 0.10    | 0.10    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 61.1 | 61.1 | 0.01    | 0.01    | 0.03    | 64.4 |

3.36. Grading - subseq pipes and vaults (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.14 | 0.14 | 2.44 | 8.04 | 0.01 | 0.02  | —       | 0.02    | 0.02   | —       | 0.02    | —    | 1,249 | 1,249 | 0.05 | 0.01 | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.03    | 0.03    | 0.45    | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207  | 207  | 0.01    | < 0.005 | —       | 207  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.55 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 164  | 164  | < 0.005 | < 0.005 | 0.35    | 165  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | 0.03    | 26.2 |
| Hauling                     | 0.10    | 0.01    | 0.71    | 0.78 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 517  | 517  | 0.09    | 0.08    | 0.68    | 545  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.50 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 155  | 155  | < 0.005 | < 0.005 | 0.01    | 156  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | < 0.005 | 26.2 |
| Hauling                     | 0.10    | 0.01    | 0.75    | 0.78 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 517  | 517  | 0.09    | 0.08    | 0.02    | 544  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.34 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 111  | 111  | < 0.005 | < 0.005 | 0.11    | 111  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.7 |
| Hauling                     | 0.07    | 0.01    | 0.53    | 0.56 | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 369  | 369  | 0.06    | 0.06    | 0.21    | 389  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.4 | 18.4 | < 0.005 | < 0.005 | 0.02    | 18.4 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.96 | 2.96 | < 0.005 | < 0.005 | < 0.005 | 3.10 |
| Hauling | 0.01    | < 0.005 | 0.10    | 0.10    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 61.1 | 61.1 | 0.01    | 0.01    | 0.03    | 64.4 |

3.37. Grading - subsq pipes and vaults (2032) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.84 | 0.70 | 6.56 | 10.2 | 0.02 | 0.14  | —       | 0.14    | 0.13   | —       | 0.13    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.84 | 0.70 | 6.56 | 10.2 | 0.02 | 0.14  | —       | 0.14    | 0.13   | —       | 0.13    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.60    | 0.50    | 4.70 | 7.32 | 0.01    | 0.10    | —       | 0.10    | 0.09    | —       | 0.09    | — | 1,252 | 1,252 | 0.05    | 0.01    | —       | 1,257 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.11    | 0.09    | 0.86 | 1.34 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 207   | 207   | 0.01    | < 0.005 | —       | 208   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.53 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | < 0.005 | 0.30    | 162   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0  | 24.0  | < 0.005 | < 0.005 | 0.03    | 25.2  |
| Hauling                     | 0.09    | 0.01    | 0.66 | 0.75 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 498   | 498   | 0.08    | 0.08    | 0.61    | 524   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.47 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153   | 153   | < 0.005 | < 0.005 | 0.01    | 153   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0  | 24.0  | < 0.005 | < 0.005 | < 0.005 | 25.2  |
| Hauling                     | 0.09    | 0.01    | 0.70 | 0.75 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 498   | 498   | 0.08    | 0.08    | 0.02    | 524   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.03    | 0.02 | 0.33 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 110   | 110   | < 0.005 | < 0.005 | 0.09    | 110   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 18.1 |
| Hauling | 0.07    | 0.01    | 0.49    | 0.54    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 356  | 356  | 0.06    | 0.06    | 0.19    | 375  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 18.2 | 18.2 | < 0.005 | < 0.005 | 0.02    | 18.2 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.85 | 2.85 | < 0.005 | < 0.005 | < 0.005 | 2.99 |
| Hauling | 0.01    | < 0.005 | 0.09    | 0.10    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 59.0 | 59.0 | 0.01    | 0.01    | 0.03    | 62.1 |

3.38. Grading - subseq pipes and vaults (2032) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.14    | 0.14    | 2.45 | 8.06 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,252 | 1,252 | 0.05    | 0.01    | —    | 1,257 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —    | 208   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.53 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | < 0.005 | 0.30 | 162   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0  | 24.0  | < 0.005 | < 0.005 | 0.03 | 25.2  |
| Hauling                     | 0.09    | 0.01    | 0.66 | 0.75 | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 498   | 498   | 0.08    | 0.08    | 0.61 | 524   |



|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.47    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153  | 153  | < 0.005 | < 0.005 | 0.01    | 153  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0 | 24.0 | < 0.005 | < 0.005 | < 0.005 | 25.2 |
| Hauling             | 0.09    | 0.01    | 0.70    | 0.75    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 498  | 498  | 0.08    | 0.08    | 0.02    | 524  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.33    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 110  | 110  | < 0.005 | < 0.005 | 0.09    | 110  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 18.1 |
| Hauling             | 0.07    | 0.01    | 0.49    | 0.54    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 356  | 356  | 0.06    | 0.06    | 0.19    | 375  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 18.2 | 18.2 | < 0.005 | < 0.005 | 0.02    | 18.2 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.85 | 2.85 | < 0.005 | < 0.005 | < 0.005 | 2.99 |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.10    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 59.0 | 59.0 | 0.01    | 0.01    | 0.03    | 62.1 |

3.39. Grading - subseq pipes and vaults (2033) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 0.82 | 0.69 | 6.44 | 10.2 | 0.02 | 0.12  | —       | 0.12    | 0.11   | —       | 0.11    | —    | 1,749 | 1,749 | 0.07 | 0.01 | — | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.82 | 0.69 | 6.44 | 10.2 | 0.02    | 0.12 | —       | 0.12    | 0.11 | —       | 0.11    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.59 | 0.49 | 4.60 | 7.29 | 0.01    | 0.09 | —       | 0.09    | 0.08 | —       | 0.08    | — | 1,249 | 1,249 | 0.05 | 0.01    | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.11 | 0.09 | 0.84 | 1.33 | < 0.005 | 0.02 | —       | 0.02    | 0.01 | —       | 0.01    | — | 207   | 207   | 0.01 | < 0.005 | —    | 208   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.51    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 160  | 160  | < 0.005 | < 0.005 | 0.26    | 160  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | 0.02    | 24.2 |
| Hauling             | 0.08    | 0.01    | 0.62    | 0.72    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 479  | 479  | 0.07    | 0.08    | 0.53    | 504  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.46    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151  | 151  | < 0.005 | < 0.005 | 0.01    | 151  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | < 0.005 | 24.2 |
| Hauling             | 0.08    | 0.01    | 0.66    | 0.72    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 479  | 479  | 0.07    | 0.08    | 0.01    | 504  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.32    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 108  | 108  | < 0.005 | < 0.005 | 0.08    | 108  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 16.5 | 16.5 | < 0.005 | < 0.005 | 0.01    | 17.3 |
| Hauling             | 0.06    | 0.01    | 0.46    | 0.52    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 342  | 342  | 0.05    | 0.06    | 0.16    | 360  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.0 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.73 | 2.73 | < 0.005 | < 0.005 | < 0.005 | 2.86 |
| Hauling             | 0.01    | < 0.005 | 0.08    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 56.6 | 56.6 | 0.01    | 0.01    | 0.03    | 59.6 |

3.40. Grading - subseq pipes and vaults (2033) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.14 | 0.14 | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05 | 0.01    | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.03 | 0.03 | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01 | < 0.005 | —    | 208   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.51    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 160  | 160  | < 0.005 | < 0.005 | 0.26    | 160  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | 0.02    | 24.2 |
| Hauling                     | 0.08    | 0.01    | 0.62    | 0.72    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 479  | 479  | 0.07    | 0.08    | 0.53    | 504  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.46    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151  | 151  | < 0.005 | < 0.005 | 0.01    | 151  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | < 0.005 | 24.2 |
| Hauling                     | 0.08    | 0.01    | 0.66    | 0.72    | < 0.005 | 0.01    | 0.15    | 0.15    | 0.01    | 0.04    | 0.05    | — | 479  | 479  | 0.07    | 0.08    | 0.01    | 504  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.32    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 108  | 108  | < 0.005 | < 0.005 | 0.08    | 108  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 16.5 | 16.5 | < 0.005 | < 0.005 | 0.01    | 17.3 |
| Hauling                     | 0.06    | 0.01    | 0.46    | 0.52    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 342  | 342  | 0.05    | 0.06    | 0.16    | 360  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.0 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.73 | 2.73 | < 0.005 | < 0.005 | < 0.005 | 2.86 |
| Hauling                     | 0.01    | < 0.005 | 0.08    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 56.6 | 56.6 | 0.01    | 0.01    | 0.03    | 59.6 |

3.41. Grading - subseq pipes and vaults (2034) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.80 | 0.67 | 6.35 | 10.2 | 0.02 | 0.11  | —       | 0.11    | 0.11   | —       | 0.11    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.80 | 0.67 | 6.35 | 10.2 | 0.02 | 0.11  | —       | 0.11    | 0.11   | —       | 0.11    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.57 | 0.48 | 4.53 | 7.28 | 0.01 | 0.08  | —       | 0.08    | 0.08   | —       | 0.08    | —    | 1,249 | 1,249 | 0.05 | 0.01 | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.10    | 0.09    | 0.83    | 1.33 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 207  | 207  | 0.01    | < 0.005 | —       | 207  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.49 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 158  | 158  | < 0.005 | < 0.005 | 0.23    | 158  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.1 | 22.1 | < 0.005 | < 0.005 | 0.02    | 23.2 |
| Hauling                     | 0.08    | 0.01    | 0.59    | 0.69 | < 0.005 | 0.01    | 0.14    | 0.15    | 0.01    | 0.04    | 0.05    | — | 461  | 461  | 0.07    | 0.08    | 0.46    | 486  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.44 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 149  | 149  | < 0.005 | < 0.005 | 0.01    | 150  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.2 | 22.2 | < 0.005 | < 0.005 | < 0.005 | 23.2 |
| Hauling                     | 0.08    | 0.01    | 0.62    | 0.69 | < 0.005 | 0.01    | 0.14    | 0.15    | 0.01    | 0.04    | 0.05    | — | 461  | 461  | 0.07    | 0.08    | 0.01    | 486  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.31 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 107  | 107  | < 0.005 | < 0.005 | 0.07    | 107  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.8 | 15.8 | < 0.005 | < 0.005 | 0.01    | 16.6 |
| Hauling                     | 0.05    | 0.01    | 0.44    | 0.50 | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 329  | 329  | 0.05    | 0.06    | 0.14    | 347  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 17.7 |



|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.62 | 2.62 | < 0.005 | < 0.005 | < 0.005 | 2.74 |
| Hauling | 0.01    | < 0.005 | 0.08    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 54.5 | 54.5 | 0.01    | 0.01    | 0.02    | 57.5 |

3.42. Grading - subsq pipes and vaults (2034) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.14    | 0.14    | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,253 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —       | 207   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.49 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 158   | 158   | < 0.005 | < 0.005 | 0.23    | 158   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.1  | 22.1  | < 0.005 | < 0.005 | 0.02    | 23.2  |
| Hauling                     | 0.08    | 0.01    | 0.59 | 0.69 | < 0.005 | 0.01    | 0.14    | 0.15    | 0.01    | 0.04    | 0.05    | — | 461   | 461   | 0.07    | 0.08    | 0.46    | 486   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.44 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 149   | 149   | < 0.005 | < 0.005 | 0.01    | 150   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.2  | 22.2  | < 0.005 | < 0.005 | < 0.005 | 23.2  |
| Hauling                     | 0.08    | 0.01    | 0.62 | 0.69 | < 0.005 | 0.01    | 0.14    | 0.15    | 0.01    | 0.04    | 0.05    | — | 461   | 461   | 0.07    | 0.08    | 0.01    | 486   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.03    | 0.02 | 0.31 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 107   | 107   | < 0.005 | < 0.005 | 0.07    | 107   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.8 | 15.8 | < 0.005 | < 0.005 | 0.01    | 16.6 |
| Hauling | 0.05    | 0.01    | 0.44    | 0.50    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 329  | 329  | 0.05    | 0.06    | 0.14    | 347  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 17.7 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.62 | 2.62 | < 0.005 | < 0.005 | < 0.005 | 2.74 |
| Hauling | 0.01    | < 0.005 | 0.08    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 54.5 | 54.5 | 0.01    | 0.01    | 0.02    | 57.5 |

3.43. Grading - subseq pipes and vaults (2035) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.79 | 0.66 | 6.23 | 10.1 | 0.02 | 0.11  | —       | 0.11    | 0.10   | —       | 0.10    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.79 | 0.66 | 6.23 | 10.1 | 0.02 | 0.11  | —       | 0.11    | 0.10   | —       | 0.10    | —    | 1,749 | 1,749 | 0.07 | 0.01 | —    | 1,755 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.56    | 0.47    | 4.45 | 7.25 | 0.01    | 0.08    | —       | 0.08    | 0.07    | —       | 0.07    | — | 1,249 | 1,249 | 0.05    | 0.01    | —    | 1,253 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.10    | 0.09    | 0.81 | 1.32 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 207   | 207   | 0.01    | < 0.005 | —    | 207   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.48 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 156   | 156   | < 0.005 | < 0.005 | 0.20 | 157   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2  | 21.2  | < 0.005 | < 0.005 | 0.02 | 22.3  |
| Hauling                     | 0.07    | 0.01    | 0.55 | 0.67 | < 0.005 | 0.01    | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 444   | 444   | 0.06    | 0.07    | 0.40 | 468   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.43    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 148  | 148  | < 0.005 | < 0.005 | 0.01    | 148  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2 | 21.2 | < 0.005 | < 0.005 | < 0.005 | 22.3 |
| Hauling             | 0.07    | 0.01    | 0.58    | 0.67    | < 0.005 | 0.01    | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 444  | 444  | 0.06    | 0.07    | 0.01    | 468  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.30    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 106  | 106  | < 0.005 | < 0.005 | 0.06    | 106  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.2 | 15.2 | < 0.005 | < 0.005 | 0.01    | 15.9 |
| Hauling             | 0.05    | 0.01    | 0.41    | 0.48    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 317  | 317  | 0.04    | 0.05    | 0.12    | 334  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.5 | 17.5 | < 0.005 | < 0.005 | 0.01    | 17.5 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.51 | 2.51 | < 0.005 | < 0.005 | < 0.005 | 2.64 |
| Hauling             | 0.01    | < 0.005 | 0.07    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 52.5 | 52.5 | 0.01    | 0.01    | 0.02    | 55.3 |

3.44. Grading - subseq pipes and vaults (2035) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,749 | 1,749 | 0.07 | 0.01 | — | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,749 | 1,749 | 0.07 | 0.01    | —    | 1,755 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.14 | 0.14 | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05 | 0.01    | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.03 | 0.03 | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01 | < 0.005 | —    | 207   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.48    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 156  | 156  | < 0.005 | < 0.005 | 0.20    | 157  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2 | 21.2 | < 0.005 | < 0.005 | 0.02    | 22.3 |
| Hauling             | 0.07    | 0.01    | 0.55    | 0.67    | < 0.005 | 0.01    | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 444  | 444  | 0.06    | 0.07    | 0.40    | 468  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.43    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 148  | 148  | < 0.005 | < 0.005 | 0.01    | 148  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2 | 21.2 | < 0.005 | < 0.005 | < 0.005 | 22.3 |
| Hauling             | 0.07    | 0.01    | 0.58    | 0.67    | < 0.005 | 0.01    | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 444  | 444  | 0.06    | 0.07    | 0.01    | 468  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.30    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 106  | 106  | < 0.005 | < 0.005 | 0.06    | 106  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.2 | 15.2 | < 0.005 | < 0.005 | 0.01    | 15.9 |
| Hauling             | 0.05    | 0.01    | 0.41    | 0.48    | < 0.005 | < 0.005 | 0.10    | 0.11    | < 0.005 | 0.03    | 0.03    | — | 317  | 317  | 0.04    | 0.05    | 0.12    | 334  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.5 | 17.5 | < 0.005 | < 0.005 | 0.01    | 17.5 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.51 | 2.51 | < 0.005 | < 0.005 | < 0.005 | 2.64 |
| Hauling             | 0.01    | < 0.005 | 0.07    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 52.5 | 52.5 | 0.01    | 0.01    | 0.02    | 55.3 |

3.45. Grading - subseq pipes and vaults (2036) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |



|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.78 | 0.65 | 6.09 | 10.1 | 0.02    | 0.10 | —       | 0.10    | 0.09 | —       | 0.09    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.78 | 0.65 | 6.09 | 10.1 | 0.02    | 0.10 | —       | 0.10    | 0.09 | —       | 0.09    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.56 | 0.46 | 4.36 | 7.23 | 0.01    | 0.07 | —       | 0.07    | 0.06 | —       | 0.06    | — | 1,252 | 1,252 | 0.05 | 0.01    | —    | 1,257 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.10 | 0.08 | 0.80 | 1.32 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 207   | 207   | 0.01 | < 0.005 | —    | 208   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.46    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 154  | 154  | < 0.005 | < 0.005 | 0.17    | 155  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | 0.01    | 21.4 |
| Hauling                     | 0.07    | 0.01    | 0.52    | 0.64    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 428  | 428  | 0.06    | 0.07    | 0.34    | 451  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.41    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 146  | 146  | < 0.005 | < 0.005 | < 0.005 | 147  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | < 0.005 | 21.4 |
| Hauling                     | 0.07    | 0.01    | 0.55    | 0.64    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 428  | 428  | 0.06    | 0.07    | 0.01    | 451  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.29    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 105  | 105  | < 0.005 | < 0.005 | 0.05    | 105  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.6 | 14.6 | < 0.005 | < 0.005 | < 0.005 | 15.3 |
| Hauling                     | 0.05    | 0.01    | 0.39    | 0.46    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 307  | 307  | 0.04    | 0.05    | 0.10    | 323  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 17.4 | 17.4 | < 0.005 | < 0.005 | 0.01    | 17.4 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.42 | 2.42 | < 0.005 | < 0.005 | < 0.005 | 2.54 |
| Hauling                     | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 50.8 | 50.8 | 0.01    | 0.01    | 0.02    | 53.5 |

3.46. Grading - subseq pipes and vaults (2036) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.14 | 0.14 | 2.45 | 8.06 | 0.01 | 0.02  | —       | 0.02    | 0.02   | —       | 0.02    | —    | 1,252 | 1,252 | 0.05 | 0.01 | —    | 1,257 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.03    | 0.03    | 0.45    | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207  | 207  | 0.01    | < 0.005 | —       | 208  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.46 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 154  | 154  | < 0.005 | < 0.005 | 0.17    | 155  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | 0.01    | 21.4 |
| Hauling                     | 0.07    | 0.01    | 0.52    | 0.64 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 428  | 428  | 0.06    | 0.07    | 0.34    | 451  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.41 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 146  | 146  | < 0.005 | < 0.005 | < 0.005 | 147  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | < 0.005 | 21.4 |
| Hauling                     | 0.07    | 0.01    | 0.55    | 0.64 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 428  | 428  | 0.06    | 0.07    | 0.01    | 451  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.29 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 105  | 105  | < 0.005 | < 0.005 | 0.05    | 105  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.6 | 14.6 | < 0.005 | < 0.005 | < 0.005 | 15.3 |
| Hauling                     | 0.05    | 0.01    | 0.39    | 0.46 | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 307  | 307  | 0.04    | 0.05    | 0.10    | 323  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.05 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 17.4 | 17.4 | < 0.005 | < 0.005 | 0.01    | 17.4 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.42 | 2.42 | < 0.005 | < 0.005 | < 0.005 | 2.54 |
| Hauling | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 50.8 | 50.8 | 0.01    | 0.01    | 0.02    | 53.5 |

3.47. Grading - subsq pipes and vaults (2037) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.77 | 0.64 | 5.98 | 10.0 | 0.02 | 0.09  | —       | 0.09    | 0.08   | —       | 0.08    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.77 | 0.64 | 5.98 | 10.0 | 0.02 | 0.09  | —       | 0.09    | 0.08   | —       | 0.08    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.55    | 0.46    | 4.27 | 7.17 | 0.01    | 0.06    | —       | 0.06    | 0.06    | —       | 0.06    | — | 1,249 | 1,249 | 0.05    | 0.01    | —       | 1,253 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.10    | 0.08    | 0.78 | 1.31 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 207   | 207   | 0.01    | < 0.005 | —       | 207   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.45 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153   | 153   | < 0.005 | < 0.005 | 0.14    | 154   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6  | 19.6  | < 0.005 | < 0.005 | 0.01    | 20.6  |
| Hauling                     | 0.06    | 0.01    | 0.48 | 0.61 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 414   | 414   | 0.05    | 0.07    | 0.29    | 436   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.40 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 145   | 145   | < 0.005 | < 0.005 | < 0.005 | 145   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6  | 19.6  | < 0.005 | < 0.005 | < 0.005 | 20.6  |
| Hauling                     | 0.06    | 0.01    | 0.51 | 0.61 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 414   | 414   | 0.05    | 0.07    | 0.01    | 435   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.03    | 0.02 | 0.28 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 104   | 104   | < 0.005 | < 0.005 | 0.04    | 104   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.0 | 14.0 | < 0.005 | < 0.005 | < 0.005 | 14.7 |
| Hauling | 0.04    | 0.01    | 0.36    | 0.44    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 296  | 296  | 0.04    | 0.05    | 0.09    | 311  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 17.2 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.32 | 2.32 | < 0.005 | < 0.005 | < 0.005 | 2.43 |
| Hauling | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 48.9 | 48.9 | 0.01    | 0.01    | 0.01    | 51.5 |

### 3.48. Grading - subseq pipes and vaults (2037) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |



|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.14    | 0.14    | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05    | 0.01    | —    | 1,253 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —    | 207   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.45 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153   | 153   | < 0.005 | < 0.005 | 0.14 | 154   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6  | 19.6  | < 0.005 | < 0.005 | 0.01 | 20.6  |
| Hauling                     | 0.06    | 0.01    | 0.48 | 0.61 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 414   | 414   | 0.05    | 0.07    | 0.29 | 436   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.40    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 145  | 145  | < 0.005 | < 0.005 | < 0.005 | 145  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6 | 19.6 | < 0.005 | < 0.005 | < 0.005 | 20.6 |
| Hauling             | 0.06    | 0.01    | 0.51    | 0.61    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 414  | 414  | 0.05    | 0.07    | 0.01    | 435  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.28    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 104  | 104  | < 0.005 | < 0.005 | 0.04    | 104  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.0 | 14.0 | < 0.005 | < 0.005 | < 0.005 | 14.7 |
| Hauling             | 0.04    | 0.01    | 0.36    | 0.44    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 296  | 296  | 0.04    | 0.05    | 0.09    | 311  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 17.2 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.32 | 2.32 | < 0.005 | < 0.005 | < 0.005 | 2.43 |
| Hauling             | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | 0.01    | 0.01    | — | 48.9 | 48.9 | 0.01    | 0.01    | 0.01    | 51.5 |

3.49. Grading - subseq pipes and vaults (2038) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 0.76 | 0.64 | 5.92 | 10.0 | 0.02 | 0.08  | —       | 0.08    | 0.07   | —       | 0.07    | —    | 1,748 | 1,748 | 0.07 | 0.01 | — | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.76 | 0.64 | 5.92 | 10.0 | 0.02    | 0.08 | —       | 0.08    | 0.07 | —       | 0.07    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.54 | 0.46 | 4.23 | 7.15 | 0.01    | 0.06 | —       | 0.06    | 0.05 | —       | 0.05    | — | 1,249 | 1,249 | 0.05 | 0.01    | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.10 | 0.08 | 0.77 | 1.31 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 207   | 207   | 0.01 | < 0.005 | —    | 207   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.44    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 152  | 152  | < 0.005 | < 0.005 | 0.12    | 152  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Hauling             | 0.06    | 0.01    | 0.46    | 0.59    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 401  | 401  | 0.05    | 0.07    | 0.25    | 422  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.39    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 144  | 144  | < 0.005 | < 0.005 | < 0.005 | 144  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | < 0.005 | 19.8 |
| Hauling             | 0.06    | 0.01    | 0.48    | 0.59    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 401  | 401  | 0.05    | 0.07    | 0.01    | 422  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.27    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 103  | 103  | < 0.005 | < 0.005 | 0.04    | 103  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.5 | 13.5 | < 0.005 | < 0.005 | < 0.005 | 14.2 |
| Hauling             | 0.04    | < 0.005 | 0.34    | 0.42    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 286  | 286  | 0.03    | 0.05    | 0.08    | 301  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.0 | 17.0 | < 0.005 | < 0.005 | 0.01    | 17.1 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.24 | 2.24 | < 0.005 | < 0.005 | < 0.005 | 2.35 |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 47.4 | 47.4 | 0.01    | 0.01    | 0.01    | 49.9 |

3.50. Grading - subseq pipes and vaults (2038) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.14 | 0.14 | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,249 | 1,249 | 0.05 | 0.01    | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.03 | 0.03 | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01 | < 0.005 | —    | 207   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.44    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 152  | 152  | < 0.005 | < 0.005 | 0.12    | 152  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Hauling                     | 0.06    | 0.01    | 0.46    | 0.59    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 401  | 401  | 0.05    | 0.07    | 0.25    | 422  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.39    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 144  | 144  | < 0.005 | < 0.005 | < 0.005 | 144  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | < 0.005 | 19.8 |
| Hauling                     | 0.06    | 0.01    | 0.48    | 0.59    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 401  | 401  | 0.05    | 0.07    | 0.01    | 422  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.27    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 103  | 103  | < 0.005 | < 0.005 | 0.04    | 103  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.5 | 13.5 | < 0.005 | < 0.005 | < 0.005 | 14.2 |
| Hauling                     | 0.04    | < 0.005 | 0.34    | 0.42    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 286  | 286  | 0.03    | 0.05    | 0.08    | 301  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.0 | 17.0 | < 0.005 | < 0.005 | 0.01    | 17.1 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.24 | 2.24 | < 0.005 | < 0.005 | < 0.005 | 2.35 |
| Hauling                     | 0.01    | < 0.005 | 0.06    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 47.4 | 47.4 | 0.01    | 0.01    | 0.01    | 49.9 |

3.51. Grading - subseq pipes and vaults (2039) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.76 | 0.63 | 5.85 | 9.98 | 0.02 | 0.08  | —       | 0.08    | 0.07   | —       | 0.07    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.76 | 0.63 | 5.85 | 9.98 | 0.02 | 0.08  | —       | 0.08    | 0.07   | —       | 0.07    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.54 | 0.45 | 4.18 | 7.13 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,248 | 1,248 | 0.05 | 0.01 | —    | 1,253 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |



|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.10    | 0.08    | 0.76    | 1.30 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 207  | 207  | 0.01    | < 0.005 | —       | 207  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.43 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151  | 151  | < 0.005 | < 0.005 | 0.10    | 151  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.2 | 18.2 | < 0.005 | < 0.005 | 0.01    | 19.1 |
| Hauling                     | 0.05    | 0.01    | 0.43    | 0.57 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 388  | 388  | 0.04    | 0.06    | 0.21    | 409  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.03    | 0.02    | 0.38 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 143  | 143  | < 0.005 | < 0.005 | < 0.005 | 143  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.3 | 18.3 | < 0.005 | < 0.005 | < 0.005 | 19.1 |
| Hauling                     | 0.05    | 0.01    | 0.45    | 0.57 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 388  | 388  | 0.04    | 0.06    | 0.01    | 409  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.02    | 0.01    | 0.27 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102  | 102  | < 0.005 | < 0.005 | 0.03    | 103  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.0 | 13.0 | < 0.005 | < 0.005 | < 0.005 | 13.7 |
| Hauling                     | 0.03    | < 0.005 | 0.32    | 0.41 | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 277  | 277  | 0.03    | 0.05    | 0.07    | 292  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.05 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 16.9 | 16.9 | < 0.005 | < 0.005 | 0.01    | 17.0 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.16 | 2.16 | < 0.005 | < 0.005 | < 0.005 | 2.26 |
| Hauling | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 45.9 | 45.9 | 0.01    | 0.01    | 0.01    | 48.3 |

3.52. Grading - subsq pipes and vaults (2039) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.14    | 0.14    | 2.44 | 8.04 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,248 | 1,248 | 0.05    | 0.01    | —       | 1,253 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01    | < 0.005 | —       | 207   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.43 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151   | 151   | < 0.005 | < 0.005 | 0.10    | 151   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.2  | 18.2  | < 0.005 | < 0.005 | 0.01    | 19.1  |
| Hauling                     | 0.05    | 0.01    | 0.43 | 0.57 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 388   | 388   | 0.04    | 0.06    | 0.21    | 409   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.02 | 0.38 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 143   | 143   | < 0.005 | < 0.005 | < 0.005 | 143   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.3  | 18.3  | < 0.005 | < 0.005 | < 0.005 | 19.1  |
| Hauling                     | 0.05    | 0.01    | 0.45 | 0.57 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 388   | 388   | 0.04    | 0.06    | 0.01    | 409   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.02    | 0.01 | 0.27 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102   | 102   | < 0.005 | < 0.005 | 0.03    | 103   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.0 | 13.0 | < 0.005 | < 0.005 | < 0.005 | 13.7 |
| Hauling | 0.03    | < 0.005 | 0.32    | 0.41    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 277  | 277  | 0.03    | 0.05    | 0.07    | 292  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 16.9 | 16.9 | < 0.005 | < 0.005 | 0.01    | 17.0 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.16 | 2.16 | < 0.005 | < 0.005 | < 0.005 | 2.26 |
| Hauling | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 45.9 | 45.9 | 0.01    | 0.01    | 0.01    | 48.3 |

### 3.53. Grading - subseq pipes and vaults (2040) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.75 | 0.63 | 5.80 | 9.97 | 0.02 | 0.07  | —       | 0.07    | 0.07   | —       | 0.07    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.75 | 0.63 | 5.80 | 9.97 | 0.02 | 0.07  | —       | 0.07    | 0.07   | —       | 0.07    | —    | 1,748 | 1,748 | 0.07 | 0.01 | —    | 1,754 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.54    | 0.45    | 4.16 | 7.14 | 0.01    | 0.05    | —       | 0.05    | 0.05    | —       | 0.05    | — | 1,252 | 1,252 | 0.05    | 0.01    | —    | 1,256 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.10    | 0.08    | 0.76 | 1.30 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 207   | 207   | 0.01    | < 0.005 | —    | 208   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.03    | 0.02 | 0.42 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 150   | 150   | < 0.005 | < 0.005 | 0.08 | 150   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7  | 17.7  | < 0.005 | < 0.005 | 0.01 | 18.5  |
| Hauling                     | 0.05    | 0.01    | 0.41 | 0.55 | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 377   | 377   | 0.04    | 0.06    | 0.18 | 397   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.38    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 142  | 142  | < 0.005 | < 0.005 | < 0.005 | 142  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | < 0.005 | 18.5 |
| Hauling             | 0.05    | 0.01    | 0.43    | 0.55    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 377  | 377  | 0.04    | 0.06    | < 0.005 | 396  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.02    | 0.01    | 0.26    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102  | 102  | < 0.005 | < 0.005 | 0.03    | 102  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 12.6 | 12.6 | < 0.005 | < 0.005 | < 0.005 | 13.3 |
| Hauling             | 0.03    | < 0.005 | 0.30    | 0.39    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 270  | 270  | 0.03    | 0.04    | 0.06    | 284  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 16.9 | 16.9 | < 0.005 | < 0.005 | < 0.005 | 16.9 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.09 | 2.09 | < 0.005 | < 0.005 | < 0.005 | 2.20 |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 44.7 | 44.7 | < 0.005 | 0.01    | 0.01    | 47.0 |

3.54. Grading - subseq pipes and vaults (2040) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 1,748 | 1,748 | 0.07 | 0.01 | — | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.20 | 0.20 | 3.42 | 11.3 | 0.02    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 1,748 | 1,748 | 0.07 | 0.01    | —    | 1,754 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.14 | 0.14 | 2.45 | 8.06 | 0.01    | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 1,252 | 1,252 | 0.05 | 0.01    | —    | 1,256 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.03 | 0.03 | 0.45 | 1.47 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 207   | 207   | 0.01 | < 0.005 | —    | 208   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |



|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.03    | 0.02    | 0.42    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 150  | 150  | < 0.005 | < 0.005 | 0.08    | 150  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 18.5 |
| Hauling             | 0.05    | 0.01    | 0.41    | 0.55    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 377  | 377  | 0.04    | 0.06    | 0.18    | 397  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.38    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 142  | 142  | < 0.005 | < 0.005 | < 0.005 | 142  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | < 0.005 | 18.5 |
| Hauling             | 0.05    | 0.01    | 0.43    | 0.55    | < 0.005 | < 0.005 | 0.14    | 0.15    | < 0.005 | 0.04    | 0.04    | — | 377  | 377  | 0.04    | 0.06    | < 0.005 | 396  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.02    | 0.01    | 0.26    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102  | 102  | < 0.005 | < 0.005 | 0.03    | 102  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 12.6 | 12.6 | < 0.005 | < 0.005 | < 0.005 | 13.3 |
| Hauling             | 0.03    | < 0.005 | 0.30    | 0.39    | < 0.005 | < 0.005 | 0.10    | 0.10    | < 0.005 | 0.03    | 0.03    | — | 270  | 270  | 0.03    | 0.04    | 0.06    | 284  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 16.9 | 16.9 | < 0.005 | < 0.005 | < 0.005 | 16.9 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.09 | 2.09 | < 0.005 | < 0.005 | < 0.005 | 2.20 |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 44.7 | 44.7 | < 0.005 | 0.01    | 0.01    | 47.0 |

3.55. Grading - subseq trenchless (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                     |      |      |      |      |         |      |      |      |      |      |      |   |       |       |         |         |      |       |
|---------------------|------|------|------|------|---------|------|------|------|------|------|------|---|-------|-------|---------|---------|------|-------|
| Off-Road            | 0.64 | 0.53 | 5.07 | 7.27 | 0.01    | 0.18 | —    | 0.18 | 0.17 | —    | 0.17 | — | 1,354 | 1,354 | 0.05    | 0.01    | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.64 | 0.53 | 5.07 | 7.27 | 0.01    | 0.18 | —    | 0.18 | 0.17 | —    | 0.17 | — | 1,354 | 1,354 | 0.05    | 0.01    | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.46 | 0.38 | 3.63 | 5.20 | 0.01    | 0.13 | —    | 0.13 | 0.12 | —    | 0.12 | — | 970   | 970   | 0.04    | 0.01    | —    | 973   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.08 | 0.07 | 0.66 | 0.95 | < 0.005 | 0.02 | —    | 0.02 | 0.02 | —    | 0.02 | — | 161   | 161   | 0.01    | < 0.005 | —    | 161   |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —    | —    | —    | —    | —    | —    | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.03 | 0.03 | 0.02 | 0.37 | 0.00    | 0.00 | 0.10 | 0.10 | 0.00 | 0.02 | 0.02 | — | 103   | 103   | < 0.005 | < 0.005 | 0.30 | 103   |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |

|                     |         |         |         |      |      |      |      |      |      |         |         |   |      |      |         |         |      |      |
|---------------------|---------|---------|---------|------|------|------|------|------|------|---------|---------|---|------|------|---------|---------|------|------|
| Daily, Winter (Max) | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.34 | 0.00 | 0.00 | 0.10 | 0.10 | 0.00 | 0.02    | 0.02    | — | 97.1 | 97.1 | < 0.005 | < 0.005 | 0.01 | 98.3 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Average Daily       | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.02    | 0.02    | 0.02    | 0.24 | 0.00 | 0.00 | 0.07 | 0.07 | 0.00 | 0.02    | 0.02    | — | 69.7 | 69.7 | < 0.005 | < 0.005 | 0.09 | 70.0 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Annual              | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 11.5 | 11.5 | < 0.005 | < 0.005 | 0.02 | 11.6 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |

3.56. Grading - subseq trenchless (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite              | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent | 0.14 | 0.14 | 1.35 | 8.52 | 0.01 | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,354 | 1,354 | 0.05 | 0.01 | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |

|                     |      |      |      |      |         |         |      |         |         |      |         |   |       |       |         |         |      |       |
|---------------------|------|------|------|------|---------|---------|------|---------|---------|------|---------|---|-------|-------|---------|---------|------|-------|
| Off-Road Equipment  | 0.14 | 0.14 | 1.35 | 8.52 | 0.01    | 0.03    | —    | 0.03    | 0.03    | —    | 0.03    | — | 1,354 | 1,354 | 0.05    | 0.01    | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.10 | 0.10 | 0.96 | 6.10 | 0.01    | 0.02    | —    | 0.02    | 0.02    | —    | 0.02    | — | 970   | 970   | 0.04    | 0.01    | —    | 973   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.02 | 0.02 | 0.18 | 1.11 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —    | < 0.005 | — | 161   | 161   | 0.01    | < 0.005 | —    | 161   |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.03 | 0.03 | 0.02 | 0.37 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02 | 0.02    | — | 103   | 103   | < 0.005 | < 0.005 | 0.30 | 103   |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.03 | 0.03 | 0.02 | 0.34 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02 | 0.02    | — | 97.1  | 97.1  | < 0.005 | < 0.005 | 0.01 | 98.3  |
| Vendor              | 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 | 0.00  |
| Hauling             | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —     | —     | —       | —       | —    | —     |

|         |         |         |         |      |      |      |      |      |      |         |         |   |      |      |         |         |      |      |
|---------|---------|---------|---------|------|------|------|------|------|------|---------|---------|---|------|------|---------|---------|------|------|
| Worker  | 0.02    | 0.02    | 0.02    | 0.24 | 0.00 | 0.00 | 0.07 | 0.07 | 0.00 | 0.02    | 0.02    | — | 69.7 | 69.7 | < 0.005 | < 0.005 | 0.09 | 70.0 |
| Vendor  | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual  | —       | —       | —       | —    | —    | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 11.5 | 11.5 | < 0.005 | < 0.005 | 0.02 | 11.6 |
| Vendor  | 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 | 0.00 |
| Hauling | 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 | 0.00 |

3.57. Grading - subseq trenchless (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite              | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment  | 0.62 | 0.52 | 4.89 | 7.24 | 0.01 | 0.17  | —     | 0.17  | 0.15   | —      | 0.15   | —    | 1,354 | 1,354 | 0.05 | 0.01 | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment  | 0.62 | 0.52 | 4.89 | 7.24 | 0.01 | 0.17  | —     | 0.17  | 0.15   | —      | 0.15   | —    | 1,354 | 1,354 | 0.05 | 0.01 | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |

|                     |         |         |         |      |         |      |      |      |      |         |         |   |      |      |         |         |      |      |
|---------------------|---------|---------|---------|------|---------|------|------|------|------|---------|---------|---|------|------|---------|---------|------|------|
| Off-Road            | 0.22    | 0.18    | 1.73    | 2.56 | < 0.005 | 0.06 | —    | 0.06 | 0.05 | —       | 0.05    | — | 480  | 480  | 0.02    | < 0.005 | —    | 481  |
| Onsite truck        | 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 | 0.00 |
| Annual              | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipment  | 0.04    | 0.03    | 0.32    | 0.47 | < 0.005 | 0.01 | —    | 0.01 | 0.01 | —       | 0.01    | — | 79.4 | 79.4 | < 0.005 | < 0.005 | —    | 79.7 |
| Onsite truck        | 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 | 0.00 |
| Offsite             | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Daily, Summer (Max) | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.36 | 0.00    | 0.00 | 0.10 | 0.10 | 0.00 | 0.02    | 0.02    | — | 101  | 101  | < 0.005 | < 0.005 | 0.27 | 101  |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.33 | 0.00    | 0.00 | 0.10 | 0.10 | 0.00 | 0.02    | 0.02    | — | 95.5 | 95.5 | < 0.005 | < 0.005 | 0.01 | 96.7 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Average Daily       | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.01    | 0.01    | 0.01    | 0.11 | 0.00    | 0.00 | 0.03 | 0.03 | 0.00 | 0.01    | 0.01    | — | 33.9 | 33.9 | < 0.005 | < 0.005 | 0.04 | 34.0 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Annual              | —       | —       | —       | —    | —       | —    | —    | —    | —    | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02 | 0.00    | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | — | 5.61 | 5.61 | < 0.005 | < 0.005 | 0.01 | 5.63 |
| Vendor              | 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 | 0.00 |

|         |      |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|
| Hauling | 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 | 0.00 |
|---------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|------|

3.58. Grading - subseq trenchless (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R    | CO2e  |
|---------------------|------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|---------|------|-------|
| Onsite              | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment  | 0.14 | 0.14 | 1.35 | 8.52 | 0.01    | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,354 | 1,354 | 0.05 | 0.01    | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment  | 0.14 | 0.14 | 1.35 | 8.52 | 0.01    | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,354 | 1,354 | 0.05 | 0.01    | —    | 1,359 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment  | 0.05 | 0.05 | 0.48 | 3.02 | < 0.005 | 0.01  | —     | 0.01  | 0.01   | —      | 0.01   | —    | 480   | 480   | 0.02 | < 0.005 | —    | 481   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —       | —    | —     |

|                     |         |         |         |      |         |         |      |         |         |         |         |   |      |      |         |         |      |      |
|---------------------|---------|---------|---------|------|---------|---------|------|---------|---------|---------|---------|---|------|------|---------|---------|------|------|
| Off-Road Equipm     | 0.01    | 0.01    | 0.09    | 0.55 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —       | < 0.005 | — | 79.4 | 79.4 | < 0.005 | < 0.005 | —    | 79.7 |
| Onsite truck        | 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 | 0.00 |
| Offsite             | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Daily, Summer (Max) | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.36 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02    | 0.02    | — | 101  | 101  | < 0.005 | < 0.005 | 0.27 | 101  |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.33 | 0.00    | 0.00    | 0.10 | 0.10    | 0.00    | 0.02    | 0.02    | — | 95.5 | 95.5 | < 0.005 | < 0.005 | 0.01 | 96.7 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Average Daily       | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.01    | 0.01    | 0.01    | 0.11 | 0.00    | 0.00    | 0.03 | 0.03    | 0.00    | 0.01    | 0.01    | — | 33.9 | 33.9 | < 0.005 | < 0.005 | 0.04 | 34.0 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |
| Annual              | —       | —       | —       | —    | —       | —       | —    | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02 | 0.00    | 0.00    | 0.01 | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 5.61 | 5.61 | < 0.005 | < 0.005 | 0.01 | 5.63 |
| Vendor              | 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 | 0.00 |
| Hauling             | 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 | 0.00 |

3.59. Paving - subsq pipes (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|



|                             |      |      |      |      |      |      |         |         |      |         |         |   |       |       |      |      |      |       |
|-----------------------------|------|------|------|------|------|------|---------|---------|------|---------|---------|---|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 1.00 | 0.84 | 7.01 | 9.73 | 0.01 | 0.23 | —       | 0.23    | 0.21 | —       | 0.21    | — | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 1.00 | 0.84 | 7.01 | 9.73 | 0.01 | 0.23 | —       | 0.23    | 0.21 | —       | 0.21    | — | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.72 | 0.60 | 5.02 | 6.97 | 0.01 | 0.16 | —       | 0.16    | 0.15 | —       | 0.15    | — | 999   | 999   | 0.04 | 0.01 | —    | 1,003 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.13    | 0.11    | 0.92    | 1.27 | < 0.005 | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.62 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171  | 171  | < 0.005 | < 0.005 | 0.50    | 172  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | 0.05    | 29.2 |
| Hauling                     | 0.10    | 0.01    | 0.71    | 0.69 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 462  | 462  | 0.09    | 0.08    | 0.75    | 487  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.04    | 0.57 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162  | 162  | < 0.005 | 0.01    | 0.01    | 164  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | < 0.005 | 29.2 |
| Hauling                     | 0.10    | 0.01    | 0.75    | 0.69 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 462  | 462  | 0.09    | 0.08    | 0.02    | 486  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.40 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116  | 116  | < 0.005 | < 0.005 | 0.15    | 117  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0 | 20.0 | < 0.005 | < 0.005 | 0.02    | 20.9 |
| Hauling                     | 0.07    | 0.01    | 0.53    | 0.49 | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 331  | 331  | 0.07    | 0.05    | 0.23    | 349  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.03    | 19.3 |

|         |         |         |      |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31 | 3.31 | < 0.005 | < 0.005 | < 0.005 | 3.46 |
| Hauling | 0.01    | < 0.005 | 0.10 | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 54.7 | 54.7 | 0.01    | 0.01    | 0.04    | 57.7 |

3.60. Paving - subsq pipes (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.27 | 0.25 | 3.98 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.27 | 0.25 | 3.98 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.19    | 0.18    | 2.85 | 6.95 | 0.01    | 0.04    | —       | 0.04    | 0.03    | —       | 0.03    | — | 999  | 999  | 0.04    | 0.01    | —       | 1,003 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.52 | 1.27 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03 | 0.62 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171  | 171  | < 0.005 | < 0.005 | 0.50    | 172   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | 0.05    | 29.2  |
| Hauling                     | 0.10    | 0.01    | 0.71 | 0.69 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 462  | 462  | 0.09    | 0.08    | 0.75    | 487   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.04 | 0.57 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162  | 162  | < 0.005 | 0.01    | 0.01    | 164   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9 | 27.9 | < 0.005 | < 0.005 | < 0.005 | 29.2  |
| Hauling                     | 0.10    | 0.01    | 0.75 | 0.69 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 462  | 462  | 0.09    | 0.08    | 0.02    | 486   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03 | 0.40 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116  | 116  | < 0.005 | < 0.005 | 0.15    | 117   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0 | 20.0 | < 0.005 | < 0.005 | 0.02    | 20.9 |
| Hauling | 0.07    | 0.01    | 0.53    | 0.49    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 331  | 331  | 0.07    | 0.05    | 0.23    | 349  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.03    | 19.3 |
| Vendor  | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31 | 3.31 | < 0.005 | < 0.005 | < 0.005 | 3.46 |
| Hauling | 0.01    | < 0.005 | 0.10    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 54.7 | 54.7 | 0.01    | 0.01    | 0.04    | 57.7 |

3.61. Paving - subsq pipes (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.98 | 0.82 | 6.88 | 9.73 | 0.01 | 0.21  | —       | 0.21    | 0.19   | —       | 0.19    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.98 | 0.82 | 6.88 | 9.73 | 0.01 | 0.21  | —       | 0.21    | 0.19   | —       | 0.19    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.70    | 0.58    | 4.92 | 6.95 | 0.01    | 0.15    | —       | 0.15    | 0.14    | —       | 0.14    | — | 996  | 996  | 0.04    | 0.01    | —    | 1,000 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.13    | 0.11    | 0.90 | 1.27 | < 0.005 | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 165  | 165  | 0.01    | < 0.005 | —    | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker                      | 0.05    | 0.05    | 0.03 | 0.59 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168  | 168  | < 0.005 | < 0.005 | 0.45 | 169   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9 | 26.9 | < 0.005 | < 0.005 | 0.05 | 28.3  |
| Hauling                     | 0.10    | 0.01    | 0.65 | 0.66 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 445  | 445  | 0.08    | 0.07    | 0.67 | 469   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.05    | 0.04    | 0.54    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159  | 159  | < 0.005 | 0.01    | 0.01    | 161  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9 | 26.9 | < 0.005 | < 0.005 | < 0.005 | 28.2 |
| Hauling             | 0.10    | 0.01    | 0.68    | 0.67    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 445  | 445  | 0.08    | 0.07    | 0.02    | 469  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.03    | 0.03    | 0.37    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114  | 114  | < 0.005 | < 0.005 | 0.14    | 114  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.01    | 20.2 |
| Hauling             | 0.07    | 0.01    | 0.48    | 0.48    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 318  | 318  | 0.06    | 0.05    | 0.21    | 335  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.02    | 18.9 |
| Vendor              | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19 | 3.19 | < 0.005 | < 0.005 | < 0.005 | 3.34 |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 52.6 | 52.6 | 0.01    | 0.01    | 0.03    | 55.5 |

3.62. Paving - subsq pipes (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment          | 0.27 | 0.25 | 3.98 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | — | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.27 | 0.25 | 3.98 | 9.70 | 0.01    | 0.05 | —       | 0.05    | 0.05 | —       | 0.05    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.19 | 0.18 | 2.84 | 6.93 | 0.01    | 0.04 | —       | 0.04    | 0.03 | —       | 0.03    | — | 996   | 996   | 0.04 | 0.01    | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.03 | 0.03 | 0.52 | 1.26 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |



|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.05    | 0.03    | 0.59    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168  | 168  | < 0.005 | < 0.005 | 0.45    | 169  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9 | 26.9 | < 0.005 | < 0.005 | 0.05    | 28.3 |
| Hauling             | 0.10    | 0.01    | 0.65    | 0.66    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 445  | 445  | 0.08    | 0.07    | 0.67    | 469  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.05    | 0.04    | 0.54    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159  | 159  | < 0.005 | 0.01    | 0.01    | 161  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9 | 26.9 | < 0.005 | < 0.005 | < 0.005 | 28.2 |
| Hauling             | 0.10    | 0.01    | 0.68    | 0.67    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 445  | 445  | 0.08    | 0.07    | 0.02    | 469  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.03    | 0.03    | 0.37    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114  | 114  | < 0.005 | < 0.005 | 0.14    | 114  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.01    | 20.2 |
| Hauling             | 0.07    | 0.01    | 0.48    | 0.48    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 318  | 318  | 0.06    | 0.05    | 0.21    | 335  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.02    | 18.9 |
| Vendor              | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19 | 3.19 | < 0.005 | < 0.005 | < 0.005 | 3.34 |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.09    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 52.6 | 52.6 | 0.01    | 0.01    | 0.03    | 55.5 |

3.63. Paving - subsq pipes (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.93 | 0.78 | 6.78 | 9.69 | 0.01    | 0.19 | —       | 0.19    | 0.18 | —       | 0.18    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.93 | 0.78 | 6.78 | 9.69 | 0.01    | 0.19 | —       | 0.19    | 0.18 | —       | 0.18    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.67 | 0.56 | 4.84 | 6.92 | 0.01    | 0.14 | —       | 0.14    | 0.13 | —       | 0.13    | — | 996   | 996   | 0.04 | 0.01    | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.12 | 0.10 | 0.88 | 1.26 | < 0.005 | 0.03 | —       | 0.03    | 0.02 | —       | 0.02    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.57    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 166  | 166  | < 0.005 | < 0.005 | 0.39    | 166  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | 0.04    | 27.3 |
| Hauling                     | 0.09    | 0.01    | 0.60    | 0.64    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 429  | 429  | 0.08    | 0.07    | 0.61    | 452  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.04    | 0.04    | 0.51    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 157  | 157  | < 0.005 | < 0.005 | 0.01    | 157  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling                     | 0.09    | 0.01    | 0.64    | 0.64    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 429  | 429  | 0.08    | 0.07    | 0.02    | 452  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.36    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 112  | 112  | < 0.005 | < 0.005 | 0.12    | 113  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.01    | 19.4 |
| Hauling                     | 0.06    | 0.01    | 0.45    | 0.46    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 306  | 306  | 0.06    | 0.05    | 0.19    | 323  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.02    | 18.6 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.07 | 3.07 | < 0.005 | < 0.005 | < 0.005 | 3.22 |
| Hauling                     | 0.01    | < 0.005 | 0.08    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 50.7 | 50.7 | 0.01    | 0.01    | 0.03    | 53.5 |

3.64. Paving - subsq pipes (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.27 | 0.25 | 3.98 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.27 | 0.25 | 3.98 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 2.84 | 6.93 | 0.01 | 0.04  | —       | 0.04    | 0.03   | —       | 0.03    | —    | 996   | 996   | 0.04 | 0.01 | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.03    | 0.03    | 0.52    | 1.26 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.57 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 166  | 166  | < 0.005 | < 0.005 | 0.39    | 166  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | 0.04    | 27.3 |
| Hauling                     | 0.09    | 0.01    | 0.60    | 0.64 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 429  | 429  | 0.08    | 0.07    | 0.61    | 452  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.05    | 0.04    | 0.04    | 0.51 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 157  | 157  | < 0.005 | < 0.005 | 0.01    | 157  |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling                     | 0.09    | 0.01    | 0.64    | 0.64 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 429  | 429  | 0.08    | 0.07    | 0.02    | 452  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.36 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 112  | 112  | < 0.005 | < 0.005 | 0.12    | 113  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.01    | 19.4 |
| Hauling                     | 0.06    | 0.01    | 0.45    | 0.46 | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 306  | 306  | 0.06    | 0.05    | 0.19    | 323  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.6 | 18.6 | < 0.005 | < 0.005 | 0.02    | 18.6 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.07 | 3.07 | < 0.005 | < 0.005 | < 0.005 | 3.22 |
| Hauling | 0.01    | < 0.005 | 0.08    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 50.7 | 50.7 | 0.01    | 0.01    | 0.03    | 53.5 |

3.65. Paving - subsq pipes (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.91 | 0.76 | 6.68 | 9.67 | 0.01 | 0.18  | —       | 0.18    | 0.17   | —       | 0.17    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.91 | 0.76 | 6.68 | 9.67 | 0.01 | 0.18  | —       | 0.18    | 0.17   | —       | 0.17    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.65    | 0.54    | 4.77 | 6.91 | 0.01    | 0.13    | —       | 0.13    | 0.12    | —       | 0.12    | — | 996  | 996  | 0.04    | 0.01    | —       | 1,000 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Off-Road Equipment          | 0.12    | 0.10    | 0.87 | 1.26 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.55 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 164  | 164  | < 0.005 | < 0.005 | 0.35    | 165   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | 0.03    | 26.2  |
| Hauling                     | 0.08    | 0.01    | 0.57 | 0.62 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 413  | 413  | 0.07    | 0.07    | 0.54    | 436   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.50 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 155  | 155  | < 0.005 | < 0.005 | 0.01    | 156   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | < 0.005 | 26.2  |
| Hauling                     | 0.08    | 0.01    | 0.60 | 0.62 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 413  | 413  | 0.07    | 0.07    | 0.01    | 435   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.03    | 0.02 | 0.34 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 111  | 111  | < 0.005 | < 0.005 | 0.11    | 111   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.7 |
| Hauling | 0.06    | 0.01    | 0.42    | 0.45    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 295  | 295  | 0.05    | 0.05    | 0.17    | 311  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.4 | 18.4 | < 0.005 | < 0.005 | 0.02    | 18.4 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.96 | 2.96 | < 0.005 | < 0.005 | < 0.005 | 3.10 |
| Hauling | 0.01    | < 0.005 | 0.08    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 48.9 | 48.9 | 0.01    | 0.01    | 0.03    | 51.5 |

3.66. Paving - subsq pipes (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.98 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.98 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |



|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.19    | 0.18    | 2.84 | 6.93 | 0.01    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 996  | 996  | 0.04    | 0.01    | —    | 1,000 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.52 | 1.26 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —    | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.55 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 164  | 164  | < 0.005 | < 0.005 | 0.35 | 165   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | 0.03 | 26.2  |
| Hauling                     | 0.08    | 0.01    | 0.57 | 0.62 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 413  | 413  | 0.07    | 0.07    | 0.54 | 436   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.50    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 155  | 155  | < 0.005 | < 0.005 | 0.01    | 156  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0 | 25.0 | < 0.005 | < 0.005 | < 0.005 | 26.2 |
| Hauling             | 0.08    | 0.01    | 0.60    | 0.62    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 413  | 413  | 0.07    | 0.07    | 0.01    | 435  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.34    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 111  | 111  | < 0.005 | < 0.005 | 0.11    | 111  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.7 |
| Hauling             | 0.06    | 0.01    | 0.42    | 0.45    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 295  | 295  | 0.05    | 0.05    | 0.17    | 311  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.4 | 18.4 | < 0.005 | < 0.005 | 0.02    | 18.4 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.96 | 2.96 | < 0.005 | < 0.005 | < 0.005 | 3.10 |
| Hauling             | 0.01    | < 0.005 | 0.08    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 48.9 | 48.9 | 0.01    | 0.01    | 0.03    | 51.5 |

3.67. Paving - subsq pipes (2032) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 0.88 | 0.73 | 6.59 | 9.64 | 0.01 | 0.17  | —       | 0.17    | 0.15   | —       | 0.15    | —    | 1,395 | 1,395 | 0.06 | 0.01 | — | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.88 | 0.73 | 6.59 | 9.64 | 0.01    | 0.17 | —       | 0.17    | 0.15 | —       | 0.15    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.63 | 0.53 | 4.72 | 6.90 | 0.01    | 0.12 | —       | 0.12    | 0.11 | —       | 0.11    | — | 999   | 999   | 0.04 | 0.01    | —    | 1,003 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.11 | 0.10 | 0.86 | 1.26 | < 0.005 | 0.02 | —       | 0.02    | 0.02 | —       | 0.02    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.53    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162  | 162  | < 0.005 | < 0.005 | 0.30    | 162  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0 | 24.0 | < 0.005 | < 0.005 | 0.03    | 25.2 |
| Hauling             | 0.07    | 0.01    | 0.53    | 0.60    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 398  | 398  | 0.06    | 0.06    | 0.48    | 419  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.47    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153  | 153  | < 0.005 | < 0.005 | 0.01    | 153  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0 | 24.0 | < 0.005 | < 0.005 | < 0.005 | 25.2 |
| Hauling             | 0.07    | 0.01    | 0.56    | 0.60    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 398  | 398  | 0.06    | 0.06    | 0.01    | 419  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.33    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 110  | 110  | < 0.005 | < 0.005 | 0.09    | 110  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 18.1 |
| Hauling             | 0.05    | 0.01    | 0.40    | 0.43    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 285  | 285  | 0.05    | 0.05    | 0.15    | 300  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 18.2 | 18.2 | < 0.005 | < 0.005 | 0.02    | 18.2 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.85 | 2.85 | < 0.005 | < 0.005 | < 0.005 | 2.99 |
| Hauling             | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 47.2 | 47.2 | 0.01    | 0.01    | 0.02    | 49.7 |

3.68. Paving - subsq pipes (2032) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.26 | 0.25 | 3.98 | 9.70 | 0.01    | 0.05 | —       | 0.05    | 0.05 | —       | 0.05    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.98 | 9.70 | 0.01    | 0.05 | —       | 0.05    | 0.05 | —       | 0.05    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 2.85 | 6.95 | 0.01    | 0.03 | —       | 0.03    | 0.03 | —       | 0.03    | — | 999   | 999   | 0.04 | 0.01    | —    | 1,003 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.03 | 0.03 | 0.52 | 1.27 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.53    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162  | 162  | < 0.005 | < 0.005 | 0.30    | 162  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0 | 24.0 | < 0.005 | < 0.005 | 0.03    | 25.2 |
| Hauling                     | 0.07    | 0.01    | 0.53    | 0.60    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 398  | 398  | 0.06    | 0.06    | 0.48    | 419  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.47    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153  | 153  | < 0.005 | < 0.005 | 0.01    | 153  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 24.0 | 24.0 | < 0.005 | < 0.005 | < 0.005 | 25.2 |
| Hauling                     | 0.07    | 0.01    | 0.56    | 0.60    | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 398  | 398  | 0.06    | 0.06    | 0.01    | 419  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.33    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 110  | 110  | < 0.005 | < 0.005 | 0.09    | 110  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 18.1 |
| Hauling                     | 0.05    | 0.01    | 0.40    | 0.43    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 285  | 285  | 0.05    | 0.05    | 0.15    | 300  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 18.2 | 18.2 | < 0.005 | < 0.005 | 0.02    | 18.2 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.85 | 2.85 | < 0.005 | < 0.005 | < 0.005 | 2.99 |
| Hauling                     | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 47.2 | 47.2 | 0.01    | 0.01    | 0.02    | 49.7 |

3.69. Paving - subsq pipes (2033) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.85 | 0.71 | 6.53 | 9.62 | 0.01 | 0.15  | —       | 0.15    | 0.14   | —       | 0.14    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.85 | 0.71 | 6.53 | 9.62 | 0.01 | 0.15  | —       | 0.15    | 0.14   | —       | 0.14    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.61 | 0.51 | 4.66 | 6.87 | 0.01 | 0.11  | —       | 0.11    | 0.10   | —       | 0.10    | —    | 996   | 996   | 0.04 | 0.01 | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.11    | 0.09    | 0.85    | 1.25 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.51 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 160  | 160  | < 0.005 | < 0.005 | 0.26    | 160  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | 0.02    | 24.2 |
| Hauling                     | 0.07    | 0.01    | 0.50    | 0.58 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 383  | 383  | 0.06    | 0.06    | 0.42    | 404  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.46 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151  | 151  | < 0.005 | < 0.005 | 0.01    | 151  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | < 0.005 | 24.2 |
| Hauling                     | 0.07    | 0.01    | 0.53    | 0.58 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 383  | 383  | 0.06    | 0.06    | 0.01    | 403  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.32 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 108  | 108  | < 0.005 | < 0.005 | 0.08    | 108  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 16.5 | 16.5 | < 0.005 | < 0.005 | 0.01    | 17.3 |
| Hauling                     | 0.05    | 0.01    | 0.37    | 0.41 | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 274  | 274  | 0.04    | 0.04    | 0.13    | 288  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.06 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.0 |



|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.73 | 2.73 | < 0.005 | < 0.005 | < 0.005 | 2.86 |
| Hauling | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 45.3 | 45.3 | 0.01    | 0.01    | 0.02    | 47.7 |

3.70. Paving - subsq pipes (2033) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.19    | 0.18    | 2.84 | 6.93 | 0.01    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 996  | 996  | 0.04    | 0.01    | —       | 1,000 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.52 | 1.26 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.51 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 160  | 160  | < 0.005 | < 0.005 | 0.26    | 160   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | 0.02    | 24.2  |
| Hauling                     | 0.07    | 0.01    | 0.50 | 0.58 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 383  | 383  | 0.06    | 0.06    | 0.42    | 404   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.46 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151  | 151  | < 0.005 | < 0.005 | 0.01    | 151   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | < 0.005 | 24.2  |
| Hauling                     | 0.07    | 0.01    | 0.53 | 0.58 | < 0.005 | 0.01    | 0.12    | 0.12    | 0.01    | 0.03    | 0.04    | — | 383  | 383  | 0.06    | 0.06    | 0.01    | 403   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.03    | 0.02 | 0.32 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 108  | 108  | < 0.005 | < 0.005 | 0.08    | 108   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 16.5 | 16.5 | < 0.005 | < 0.005 | 0.01    | 17.3 |
| Hauling | 0.05    | 0.01    | 0.37    | 0.41    | < 0.005 | < 0.005 | 0.08    | 0.09    | < 0.005 | 0.02    | 0.03    | — | 274  | 274  | 0.04    | 0.04    | 0.13    | 288  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.9 | 17.9 | < 0.005 | < 0.005 | 0.01    | 18.0 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.73 | 2.73 | < 0.005 | < 0.005 | < 0.005 | 2.86 |
| Hauling | 0.01    | < 0.005 | 0.07    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 45.3 | 45.3 | 0.01    | 0.01    | 0.02    | 47.7 |

3.71. Paving - subsq pipes (2034) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.83 | 0.69 | 6.48 | 9.60 | 0.01 | 0.15  | —       | 0.15    | 0.14   | —       | 0.14    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.83 | 0.69 | 6.48 | 9.60 | 0.01 | 0.15  | —       | 0.15    | 0.14   | —       | 0.14    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.59    | 0.50    | 4.63 | 6.86 | 0.01    | 0.10    | —       | 0.10    | 0.10    | —       | 0.10    | — | 996  | 996  | 0.04    | 0.01    | —    | 1,000 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.11    | 0.09    | 0.84 | 1.25 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 165  | 165  | 0.01    | < 0.005 | —    | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.49 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 158  | 158  | < 0.005 | < 0.005 | 0.23 | 158   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.1 | 22.1 | < 0.005 | < 0.005 | 0.02 | 23.2  |
| Hauling                     | 0.06    | 0.01    | 0.47 | 0.55 | < 0.005 | 0.01    | 0.11    | 0.12    | 0.01    | 0.03    | 0.04    | — | 369  | 369  | 0.05    | 0.06    | 0.37 | 389   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.44    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 149  | 149  | < 0.005 | < 0.005 | 0.01    | 150  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.2 | 22.2 | < 0.005 | < 0.005 | < 0.005 | 23.2 |
| Hauling             | 0.06    | 0.01    | 0.49    | 0.56    | < 0.005 | 0.01    | 0.11    | 0.12    | 0.01    | 0.03    | 0.04    | — | 369  | 369  | 0.05    | 0.06    | 0.01    | 389  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.31    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 107  | 107  | < 0.005 | < 0.005 | 0.07    | 107  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.8 | 15.8 | < 0.005 | < 0.005 | 0.01    | 16.6 |
| Hauling             | 0.04    | 0.01    | 0.35    | 0.40    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 263  | 263  | 0.04    | 0.04    | 0.11    | 278  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 17.7 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.62 | 2.62 | < 0.005 | < 0.005 | < 0.005 | 2.74 |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 43.6 | 43.6 | 0.01    | 0.01    | 0.02    | 46.0 |

3.72. Paving - subsq pipes (2034) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | — | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01    | 0.05 | —       | 0.05    | 0.05 | —       | 0.05    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.19 | 0.18 | 2.84 | 6.93 | 0.01    | 0.03 | —       | 0.03    | 0.03 | —       | 0.03    | — | 996   | 996   | 0.04 | 0.01    | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.03 | 0.03 | 0.52 | 1.26 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.49    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 158  | 158  | < 0.005 | < 0.005 | 0.23    | 158  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.1 | 22.1 | < 0.005 | < 0.005 | 0.02    | 23.2 |
| Hauling             | 0.06    | 0.01    | 0.47    | 0.55    | < 0.005 | 0.01    | 0.11    | 0.12    | 0.01    | 0.03    | 0.04    | — | 369  | 369  | 0.05    | 0.06    | 0.37    | 389  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.44    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 149  | 149  | < 0.005 | < 0.005 | 0.01    | 150  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 22.2 | 22.2 | < 0.005 | < 0.005 | < 0.005 | 23.2 |
| Hauling             | 0.06    | 0.01    | 0.49    | 0.56    | < 0.005 | 0.01    | 0.11    | 0.12    | 0.01    | 0.03    | 0.04    | — | 369  | 369  | 0.05    | 0.06    | 0.01    | 389  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.31    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 107  | 107  | < 0.005 | < 0.005 | 0.07    | 107  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.8 | 15.8 | < 0.005 | < 0.005 | 0.01    | 16.6 |
| Hauling             | 0.04    | 0.01    | 0.35    | 0.40    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 263  | 263  | 0.04    | 0.04    | 0.11    | 278  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.06    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 17.7 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.62 | 2.62 | < 0.005 | < 0.005 | < 0.005 | 2.74 |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 43.6 | 43.6 | 0.01    | 0.01    | 0.02    | 46.0 |

3.73. Paving - subsq pipes (2035) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.81 | 0.68 | 6.40 | 9.58 | 0.01    | 0.13 | —       | 0.13    | 0.12 | —       | 0.12    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.81 | 0.68 | 6.40 | 9.58 | 0.01    | 0.13 | —       | 0.13    | 0.12 | —       | 0.12    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.58 | 0.48 | 4.57 | 6.84 | 0.01    | 0.09 | —       | 0.09    | 0.09 | —       | 0.09    | — | 996   | 996   | 0.04 | 0.01    | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.11 | 0.09 | 0.83 | 1.25 | < 0.005 | 0.02 | —       | 0.02    | 0.02 | —       | 0.02    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |



|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.48    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 156  | 156  | < 0.005 | < 0.005 | 0.20    | 157  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2 | 21.2 | < 0.005 | < 0.005 | 0.02    | 22.3 |
| Hauling                     | 0.06    | 0.01    | 0.44    | 0.53    | < 0.005 | 0.01    | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 355  | 355  | 0.05    | 0.06    | 0.32    | 374  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.43    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 148  | 148  | < 0.005 | < 0.005 | 0.01    | 148  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2 | 21.2 | < 0.005 | < 0.005 | < 0.005 | 22.3 |
| Hauling                     | 0.06    | 0.01    | 0.46    | 0.53    | < 0.005 | 0.01    | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 355  | 355  | 0.05    | 0.06    | 0.01    | 374  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.30    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 106  | 106  | < 0.005 | < 0.005 | 0.06    | 106  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.2 | 15.2 | < 0.005 | < 0.005 | 0.01    | 15.9 |
| Hauling                     | 0.04    | 0.01    | 0.33    | 0.38    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 254  | 254  | 0.03    | 0.04    | 0.10    | 267  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.5 | 17.5 | < 0.005 | < 0.005 | 0.01    | 17.5 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.51 | 2.51 | < 0.005 | < 0.005 | < 0.005 | 2.64 |
| Hauling                     | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 42.0 | 42.0 | 0.01    | 0.01    | 0.02    | 44.2 |

3.74. Paving - subsq pipes (2035) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 2.84 | 6.93 | 0.01 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 996   | 996   | 0.04 | 0.01 | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.03    | 0.03    | 0.52    | 1.26 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.48 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 156  | 156  | < 0.005 | < 0.005 | 0.20    | 157  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2 | 21.2 | < 0.005 | < 0.005 | 0.02    | 22.3 |
| Hauling                     | 0.06    | 0.01    | 0.44    | 0.53 | < 0.005 | 0.01    | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 355  | 355  | 0.05    | 0.06    | 0.32    | 374  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.03    | 0.43 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 148  | 148  | < 0.005 | < 0.005 | 0.01    | 148  |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.2 | 21.2 | < 0.005 | < 0.005 | < 0.005 | 22.3 |
| Hauling                     | 0.06    | 0.01    | 0.46    | 0.53 | < 0.005 | 0.01    | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 355  | 355  | 0.05    | 0.06    | 0.01    | 374  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.30 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 106  | 106  | < 0.005 | < 0.005 | 0.06    | 106  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 15.2 | 15.2 | < 0.005 | < 0.005 | 0.01    | 15.9 |
| Hauling                     | 0.04    | 0.01    | 0.33    | 0.38 | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 254  | 254  | 0.03    | 0.04    | 0.10    | 267  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.05 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.5 | 17.5 | < 0.005 | < 0.005 | 0.01    | 17.5 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.51 | 2.51 | < 0.005 | < 0.005 | < 0.005 | 2.64 |
| Hauling | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 42.0 | 42.0 | 0.01    | 0.01    | 0.02    | 44.2 |

3.75. Paving - subsq pipes (2036) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.80 | 0.67 | 6.32 | 9.57 | 0.01 | 0.12  | —       | 0.12    | 0.11   | —       | 0.11    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.80 | 0.67 | 6.32 | 9.57 | 0.01 | 0.12  | —       | 0.12    | 0.11   | —       | 0.11    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.57    | 0.48    | 4.53 | 6.85 | 0.01    | 0.09    | —       | 0.09    | 0.08    | —       | 0.08    | — | 999  | 999  | 0.04    | 0.01    | —       | 1,003 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Off-Road Equipment          | 0.10    | 0.09    | 0.83 | 1.25 | < 0.005 | 0.02    | —       | 0.02    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.46 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 154  | 154  | < 0.005 | < 0.005 | 0.17    | 155   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | 0.01    | 21.4  |
| Hauling                     | 0.05    | 0.01    | 0.41 | 0.51 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 343  | 343  | 0.05    | 0.06    | 0.27    | 361   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.41 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 146  | 146  | < 0.005 | < 0.005 | < 0.005 | 147   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | < 0.005 | 21.4  |
| Hauling                     | 0.05    | 0.01    | 0.44 | 0.51 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 343  | 343  | 0.05    | 0.06    | 0.01    | 361   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.03    | 0.02 | 0.29 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 105  | 105  | < 0.005 | < 0.005 | 0.05    | 105   |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.6 | 14.6 | < 0.005 | < 0.005 | < 0.005 | 15.3 |
| Hauling | 0.04    | 0.01    | 0.31    | 0.37    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 245  | 245  | 0.03    | 0.04    | 0.08    | 258  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 17.4 | 17.4 | < 0.005 | < 0.005 | 0.01    | 17.4 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.42 | 2.42 | < 0.005 | < 0.005 | < 0.005 | 2.54 |
| Hauling | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 40.6 | 40.6 | 0.01    | 0.01    | 0.01    | 42.8 |

3.76. Paving - subsq pipes (2036) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.19    | 0.18    | 2.85 | 6.95 | 0.01    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 999  | 999  | 0.04    | 0.01    | —    | 1,003 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.52 | 1.27 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —    | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.46 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 154  | 154  | < 0.005 | < 0.005 | 0.17 | 155   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | 0.01 | 21.4  |
| Hauling                     | 0.05    | 0.01    | 0.41 | 0.51 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 343  | 343  | 0.05    | 0.06    | 0.27 | 361   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.03    | 0.41    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 146  | 146  | < 0.005 | < 0.005 | < 0.005 | 147  |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.4 | 20.4 | < 0.005 | < 0.005 | < 0.005 | 21.4 |
| Hauling             | 0.05    | 0.01    | 0.44    | 0.51    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 343  | 343  | 0.05    | 0.06    | 0.01    | 361  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.29    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 105  | 105  | < 0.005 | < 0.005 | 0.05    | 105  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.6 | 14.6 | < 0.005 | < 0.005 | < 0.005 | 15.3 |
| Hauling             | 0.04    | 0.01    | 0.31    | 0.37    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 245  | 245  | 0.03    | 0.04    | 0.08    | 258  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 17.4 | 17.4 | < 0.005 | < 0.005 | 0.01    | 17.4 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.42 | 2.42 | < 0.005 | < 0.005 | < 0.005 | 2.54 |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 40.6 | 40.6 | 0.01    | 0.01    | 0.01    | 42.8 |

### 3.77. Paving - subsq pipes (2037) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment          | 0.78 | 0.65 | 6.24 | 9.55 | 0.01 | 0.11  | —       | 0.11    | 0.10   | —       | 0.10    | —    | 1,395 | 1,395 | 0.06 | 0.01 | — | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |



|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.78 | 0.65 | 6.24 | 9.55 | 0.01    | 0.11 | —       | 0.11    | 0.10 | —       | 0.10    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.56 | 0.47 | 4.45 | 6.82 | 0.01    | 0.08 | —       | 0.08    | 0.07 | —       | 0.07    | — | 996   | 996   | 0.04 | 0.01    | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.10 | 0.09 | 0.81 | 1.25 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.45    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153  | 153  | < 0.005 | < 0.005 | 0.14    | 154  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6 | 19.6 | < 0.005 | < 0.005 | 0.01    | 20.6 |
| Hauling             | 0.05    | 0.01    | 0.39    | 0.49    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 331  | 331  | 0.04    | 0.05    | 0.23    | 348  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.40    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 145  | 145  | < 0.005 | < 0.005 | < 0.005 | 145  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6 | 19.6 | < 0.005 | < 0.005 | < 0.005 | 20.6 |
| Hauling             | 0.05    | 0.01    | 0.41    | 0.49    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 331  | 331  | 0.04    | 0.05    | 0.01    | 348  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.03    | 0.02    | 0.28    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 104  | 104  | < 0.005 | < 0.005 | 0.04    | 104  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.0 | 14.0 | < 0.005 | < 0.005 | < 0.005 | 14.7 |
| Hauling             | 0.03    | 0.01    | 0.29    | 0.35    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 237  | 237  | 0.03    | 0.04    | 0.07    | 249  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 17.2 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.32 | 2.32 | < 0.005 | < 0.005 | < 0.005 | 2.43 |
| Hauling             | 0.01    | < 0.005 | 0.05    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 39.2 | 39.2 | < 0.005 | 0.01    | 0.01    | 41.2 |

3.78. Paving - subsq pipes (2037) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.26 | 0.25 | 3.97 | 9.70 | 0.01    | 0.05 | —       | 0.05    | 0.05 | —       | 0.05    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.97 | 9.70 | 0.01    | 0.05 | —       | 0.05    | 0.05 | —       | 0.05    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 2.84 | 6.93 | 0.01    | 0.03 | —       | 0.03    | 0.03 | —       | 0.03    | — | 996   | 996   | 0.04 | 0.01    | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.03 | 0.03 | 0.52 | 1.26 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.45    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 153  | 153  | < 0.005 | < 0.005 | 0.14    | 154  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6 | 19.6 | < 0.005 | < 0.005 | 0.01    | 20.6 |
| Hauling                     | 0.05    | 0.01    | 0.39    | 0.49    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 331  | 331  | 0.04    | 0.05    | 0.23    | 348  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.40    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 145  | 145  | < 0.005 | < 0.005 | < 0.005 | 145  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.6 | 19.6 | < 0.005 | < 0.005 | < 0.005 | 20.6 |
| Hauling                     | 0.05    | 0.01    | 0.41    | 0.49    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.04    | — | 331  | 331  | 0.04    | 0.05    | 0.01    | 348  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.28    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 104  | 104  | < 0.005 | < 0.005 | 0.04    | 104  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 14.0 | 14.0 | < 0.005 | < 0.005 | < 0.005 | 14.7 |
| Hauling                     | 0.03    | 0.01    | 0.29    | 0.35    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.03    | — | 237  | 237  | 0.03    | 0.04    | 0.07    | 249  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.2 | 17.2 | < 0.005 | < 0.005 | 0.01    | 17.2 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.32 | 2.32 | < 0.005 | < 0.005 | < 0.005 | 2.43 |
| Hauling                     | 0.01    | < 0.005 | 0.05    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 39.2 | 39.2 | < 0.005 | 0.01    | 0.01    | 41.2 |

3.79. Paving - subsq pipes (2038) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.77 | 0.64 | 6.16 | 9.54 | 0.01 | 0.10  | —       | 0.10    | 0.09   | —       | 0.09    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.77 | 0.64 | 6.16 | 9.54 | 0.01 | 0.10  | —       | 0.10    | 0.09   | —       | 0.09    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.55 | 0.46 | 4.40 | 6.81 | 0.01 | 0.07  | —       | 0.07    | 0.07   | —       | 0.07    | —    | 996   | 996   | 0.04 | 0.01 | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | 0.10    | 0.08    | 0.80    | 1.24 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.44 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 152  | 152  | < 0.005 | < 0.005 | 0.12    | 152  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.01    | 19.8 |
| Hauling                     | 0.04    | < 0.005 | 0.36    | 0.47 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 320  | 320  | 0.04    | 0.05    | 0.20    | 338  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.04    | 0.02    | 0.39 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 144  | 144  | < 0.005 | < 0.005 | < 0.005 | 144  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | < 0.005 | 19.8 |
| Hauling                     | 0.04    | < 0.005 | 0.39    | 0.47 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 320  | 320  | 0.04    | 0.05    | 0.01    | 338  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.27 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 103  | 103  | < 0.005 | < 0.005 | 0.04    | 103  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.5 | 13.5 | < 0.005 | < 0.005 | < 0.005 | 14.2 |
| Hauling                     | 0.03    | < 0.005 | 0.27    | 0.34 | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.02    | — | 229  | 229  | 0.03    | 0.04    | 0.06    | 241  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.05 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.0 | 17.0 | < 0.005 | < 0.005 | 0.01    | 17.1 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.24 | 2.24 | < 0.005 | < 0.005 | < 0.005 | 2.35 |
| Hauling | 0.01    | < 0.005 | 0.05    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 37.9 | 37.9 | < 0.005 | 0.01    | 0.01    | 39.9 |

3.80. Paving - subsq pipes (2038) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|-------|
| Off-Road Equipment          | 0.19    | 0.18    | 2.84 | 6.93 | 0.01    | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 996  | 996  | 0.04    | 0.01    | —       | 1,000 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Off-Road Equipment          | 0.03    | 0.03    | 0.52 | 1.26 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —     |
| Onsite truck                | 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    | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.44 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 152  | 152  | < 0.005 | < 0.005 | 0.12    | 152   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | 0.01    | 19.8  |
| Hauling                     | 0.04    | < 0.005 | 0.36 | 0.47 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 320  | 320  | 0.04    | 0.05    | 0.20    | 338   |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.39 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 144  | 144  | < 0.005 | < 0.005 | < 0.005 | 144   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | < 0.005 | 19.8  |
| Hauling                     | 0.04    | < 0.005 | 0.39 | 0.47 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 320  | 320  | 0.04    | 0.05    | 0.01    | 338   |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —     |
| Worker                      | 0.03    | 0.03    | 0.02 | 0.27 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 103  | 103  | < 0.005 | < 0.005 | 0.04    | 103   |



|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.5 | 13.5 | < 0.005 | < 0.005 | < 0.005 | 14.2 |
| Hauling | 0.03    | < 0.005 | 0.27    | 0.34    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.02    | — | 229  | 229  | 0.03    | 0.04    | 0.06    | 241  |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 17.0 | 17.0 | < 0.005 | < 0.005 | 0.01    | 17.1 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.24 | 2.24 | < 0.005 | < 0.005 | < 0.005 | 2.35 |
| Hauling | 0.01    | < 0.005 | 0.05    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 37.9 | 37.9 | < 0.005 | 0.01    | 0.01    | 39.9 |

3.81. Paving - subsq pipes (2039) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.76 | 0.64 | 6.12 | 9.53 | 0.01 | 0.10  | —       | 0.10    | 0.09   | —       | 0.09    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.76 | 0.64 | 6.12 | 9.53 | 0.01 | 0.10  | —       | 0.10    | 0.09   | —       | 0.09    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |      |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.55    | 0.46    | 4.37 | 6.81 | 0.01    | 0.07    | —       | 0.07    | 0.06    | —       | 0.06    | — | 996  | 996  | 0.04    | 0.01    | —    | 1,000 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Off-Road Equipment          | 0.10    | 0.08    | 0.80 | 1.24 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —    | 166   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —     |
| Worker                      | 0.04    | 0.04    | 0.02 | 0.43 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151  | 151  | < 0.005 | < 0.005 | 0.10 | 151   |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.2 | 18.2 | < 0.005 | < 0.005 | 0.01 | 19.1  |
| Hauling                     | 0.04    | < 0.005 | 0.35 | 0.45 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 311  | 311  | 0.03    | 0.05    | 0.17 | 327   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.03    | 0.02    | 0.38    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 143  | 143  | < 0.005 | < 0.005 | < 0.005 | 143  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.3 | 18.3 | < 0.005 | < 0.005 | < 0.005 | 19.1 |
| Hauling             | 0.04    | < 0.005 | 0.36    | 0.46    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 311  | 311  | 0.03    | 0.05    | < 0.005 | 327  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.02    | 0.01    | 0.27    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102  | 102  | < 0.005 | < 0.005 | 0.03    | 103  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.0 | 13.0 | < 0.005 | < 0.005 | < 0.005 | 13.7 |
| Hauling             | 0.03    | < 0.005 | 0.26    | 0.32    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.02    | — | 222  | 222  | 0.02    | 0.04    | 0.05    | 234  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 16.9 | 16.9 | < 0.005 | < 0.005 | 0.01    | 17.0 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.16 | 2.16 | < 0.005 | < 0.005 | < 0.005 | 2.26 |
| Hauling             | 0.01    | < 0.005 | 0.05    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 36.7 | 36.7 | < 0.005 | 0.01    | 0.01    | 38.7 |

3.82. Paving - subsq pipes (2039) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | — | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.26 | 0.25 | 3.97 | 9.70 | 0.01    | 0.05 | —       | 0.05    | 0.05 | —       | 0.05    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.19 | 0.18 | 2.84 | 6.93 | 0.01    | 0.03 | —       | 0.03    | 0.03 | —       | 0.03    | — | 996   | 996   | 0.04 | 0.01    | —    | 1,000 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipm ent         | 0.03 | 0.03 | 0.52 | 1.26 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.04    | 0.02    | 0.43    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 151  | 151  | < 0.005 | < 0.005 | 0.10    | 151  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.2 | 18.2 | < 0.005 | < 0.005 | 0.01    | 19.1 |
| Hauling             | 0.04    | < 0.005 | 0.35    | 0.45    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 311  | 311  | 0.03    | 0.05    | 0.17    | 327  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.04    | 0.03    | 0.02    | 0.38    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 143  | 143  | < 0.005 | < 0.005 | < 0.005 | 143  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.3 | 18.3 | < 0.005 | < 0.005 | < 0.005 | 19.1 |
| Hauling             | 0.04    | < 0.005 | 0.36    | 0.46    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 311  | 311  | 0.03    | 0.05    | < 0.005 | 327  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.03    | 0.02    | 0.01    | 0.27    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102  | 102  | < 0.005 | < 0.005 | 0.03    | 103  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 13.0 | 13.0 | < 0.005 | < 0.005 | < 0.005 | 13.7 |
| Hauling             | 0.03    | < 0.005 | 0.26    | 0.32    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.02    | — | 222  | 222  | 0.02    | 0.04    | 0.05    | 234  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 16.9 | 16.9 | < 0.005 | < 0.005 | 0.01    | 17.0 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.16 | 2.16 | < 0.005 | < 0.005 | < 0.005 | 2.26 |
| Hauling             | 0.01    | < 0.005 | 0.05    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 36.7 | 36.7 | < 0.005 | 0.01    | 0.01    | 38.7 |

3.83. Paving - subsq pipes (2040) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |      |      |      |      |         |      |         |         |      |         |         |   |       |       |      |         |      |       |
|-----------------------------|------|------|------|------|---------|------|---------|---------|------|---------|---------|---|-------|-------|------|---------|------|-------|
| Off-Road                    | 0.76 | 0.63 | 6.09 | 9.53 | 0.01    | 0.10 | —       | 0.10    | 0.09 | —       | 0.09    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.76 | 0.63 | 6.09 | 9.53 | 0.01    | 0.10 | —       | 0.10    | 0.09 | —       | 0.09    | — | 1,395 | 1,395 | 0.06 | 0.01    | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.54 | 0.45 | 4.36 | 6.83 | 0.01    | 0.07 | —       | 0.07    | 0.06 | —       | 0.06    | — | 999   | 999   | 0.04 | 0.01    | —    | 1,003 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —    | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | — | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Annual                      | —    | —    | —    | —    | —       | —    | —       | —       | —    | —       | —       | — | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.10 | 0.08 | 0.80 | 1.25 | < 0.005 | 0.01 | —       | 0.01    | 0.01 | —       | 0.01    | — | 165   | 165   | 0.01 | < 0.005 | —    | 166   |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.03    | 0.02    | 0.42    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 150  | 150  | < 0.005 | < 0.005 | 0.08    | 150  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 18.5 |
| Hauling                     | 0.04    | < 0.005 | 0.33    | 0.44    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 302  | 302  | 0.03    | 0.05    | 0.15    | 317  |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.38    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 142  | 142  | < 0.005 | < 0.005 | < 0.005 | 142  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | < 0.005 | 18.5 |
| Hauling                     | 0.04    | < 0.005 | 0.35    | 0.44    | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 302  | 302  | 0.03    | 0.05    | < 0.005 | 317  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.02    | 0.01    | 0.26    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102  | 102  | < 0.005 | < 0.005 | 0.03    | 102  |
| Vendor                      | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 12.6 | 12.6 | < 0.005 | < 0.005 | < 0.005 | 13.3 |
| Hauling                     | 0.03    | < 0.005 | 0.24    | 0.31    | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.02    | — | 216  | 216  | 0.02    | 0.03    | 0.05    | 227  |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.05    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 16.9 | 16.9 | < 0.005 | < 0.005 | < 0.005 | 16.9 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.09 | 2.09 | < 0.005 | < 0.005 | < 0.005 | 2.20 |
| Hauling                     | < 0.005 | < 0.005 | 0.04    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 35.8 | 35.8 | < 0.005 | 0.01    | 0.01    | 37.6 |

3.84. Paving - subsq pipes (2040) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.26 | 0.25 | 3.97 | 9.70 | 0.01 | 0.05  | —       | 0.05    | 0.05   | —       | 0.05    | —    | 1,395 | 1,395 | 0.06 | 0.01 | —    | 1,400 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 2.85 | 6.95 | 0.01 | 0.03  | —       | 0.03    | 0.03   | —       | 0.03    | —    | 999   | 999   | 0.04 | 0.01 | —    | 1,003 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | —    | —     |



|                             |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent         | 0.03    | 0.03    | 0.52    | 1.27 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 165  | 165  | 0.01    | < 0.005 | —       | 166  |
| Dust From Material Movement | —       | —       | —       | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.04    | 0.03    | 0.02    | 0.42 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 150  | 150  | < 0.005 | < 0.005 | 0.08    | 150  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 18.5 |
| Hauling                     | 0.04    | < 0.005 | 0.33    | 0.44 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 302  | 302  | 0.03    | 0.05    | 0.15    | 317  |
| Daily, Winter (Max)         | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.03    | 0.02    | 0.38 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 142  | 142  | < 0.005 | < 0.005 | < 0.005 | 142  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | < 0.005 | 18.5 |
| Hauling                     | 0.04    | < 0.005 | 0.35    | 0.44 | < 0.005 | < 0.005 | 0.11    | 0.12    | < 0.005 | 0.03    | 0.03    | — | 302  | 302  | 0.03    | 0.05    | < 0.005 | 317  |
| Average Daily               | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.03    | 0.02    | 0.01    | 0.26 | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 102  | 102  | < 0.005 | < 0.005 | 0.03    | 102  |
| Vendor                      | < 0.005 | < 0.005 | 0.01    | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 12.6 | 12.6 | < 0.005 | < 0.005 | < 0.005 | 13.3 |
| Hauling                     | 0.03    | < 0.005 | 0.24    | 0.31 | < 0.005 | < 0.005 | 0.08    | 0.08    | < 0.005 | 0.02    | 0.02    | — | 216  | 216  | 0.02    | 0.03    | 0.05    | 227  |
| Annual                      | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.05 | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 16.9 | 16.9 | < 0.005 | < 0.005 | < 0.005 | 16.9 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.09 | 2.09 | < 0.005 | < 0.005 | < 0.005 | 2.20 |
| Hauling | < 0.005 | < 0.005 | 0.04    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 35.8 | 35.8 | < 0.005 | 0.01    | 0.01    | 37.6 |

3.85. Grading - CPS (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.64 | 0.54 | 4.82 | 8.37 | 0.01 | 0.16  | —     | 0.16  | 0.15   | —      | 0.15   | —    | 1,272 | 1,272 | 0.05 | 0.01 | —    | 1,277 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | 0.11  | 0.11  | —      | 0.01   | 0.01   | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.64 | 0.54 | 4.82 | 8.37 | 0.01 | 0.16  | —     | 0.16  | 0.15   | —      | 0.15   | —    | 1,272 | 1,272 | 0.05 | 0.01 | —    | 1,277 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | 0.11  | 0.11  | —      | 0.01   | 0.01   | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Off-Road Equipment          | 0.11    | 0.10    | 0.86 | 1.49 | < 0.005 | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 227  | 227  | 0.01    | < 0.005 | —       | 227  |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.02    | 0.02    | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | 0.02    | 0.02    | 0.16 | 0.27 | < 0.005 | 0.01    | —       | 0.01    | < 0.005 | —       | < 0.005 | — | 37.5 | 37.5 | < 0.005 | < 0.005 | —       | 37.6 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.07    | 0.07    | 0.04 | 0.85 | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 248  | 248  | < 0.005 | < 0.005 | 0.59    | 250  |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | 0.04    | 27.3 |
| Hauling                     | 0.04    | < 0.005 | 0.30 | 0.32 | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 215  | 215  | 0.04    | 0.03    | 0.30    | 226  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.07    | 0.07    | 0.06 | 0.77 | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 235  | 235  | < 0.005 | < 0.005 | 0.02    | 236  |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling                     | 0.04    | < 0.005 | 0.32 | 0.32 | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 215  | 215  | 0.04    | 0.03    | 0.01    | 226  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | 0.01 | 0.13 | 0.00    | 0.00    | 0.04    | 0.04    | 0.00    | 0.01    | 0.01    | — | 41.9 | 41.9 | < 0.005 | < 0.005 | 0.05    | 42.1 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.63 | 4.63 | < 0.005 | < 0.005 | < 0.005 | 4.85 |
| Hauling | 0.01    | < 0.005 | 0.06    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 38.2 | 38.2 | 0.01    | 0.01    | 0.02    | 40.3 |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 6.94 | 6.94 | < 0.005 | < 0.005 | 0.01    | 6.97 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.77 | 0.77 | < 0.005 | < 0.005 | < 0.005 | 0.80 |
| Hauling | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 6.33 | 6.33 | < 0.005 | < 0.005 | < 0.005 | 6.67 |

### 3.86. Grading - CPS (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 3.51 | 8.86 | 0.01 | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,272 | 1,272 | 0.05 | 0.01 | —    | 1,277 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | 0.11  | 0.11  | —      | 0.01   | 0.01   | —    | —     | —     | —    | —    | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Daily, Winter (Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 3.51 | 8.86 | 0.01 | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,272 | 1,272 | 0.05 | 0.01 | —    | 1,277 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |      |      |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.11    | 0.11    | —       | 0.01    | 0.01    | — | —    | —    | —       | —       | —    | —    |
| Onsite truck                | 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 | 0.00 |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipment          | 0.03    | 0.03    | 0.62 | 1.58 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 227  | 227  | 0.01    | < 0.005 | —    | 227  |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.02    | 0.02    | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —    |
| Onsite truck                | 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 | 0.00 |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipment          | 0.01    | 0.01    | 0.11 | 0.29 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 37.5 | 37.5 | < 0.005 | < 0.005 | —    | 37.6 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —    | —    |
| Onsite truck                | 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 | 0.00 |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker                      | 0.07    | 0.07    | 0.04 | 0.85 | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 248  | 248  | < 0.005 | < 0.005 | 0.59 | 250  |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | 0.04 | 27.3 |
| Hauling                     | 0.04    | < 0.005 | 0.30 | 0.32 | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 215  | 215  | 0.04    | 0.03    | 0.30 | 226  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.07    | 0.07    | 0.06    | 0.77    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 235  | 235  | < 0.005 | < 0.005 | 0.02    | 236  |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0 | 26.0 | < 0.005 | < 0.005 | < 0.005 | 27.2 |
| Hauling             | 0.04    | < 0.005 | 0.32    | 0.32    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 215  | 215  | 0.04    | 0.03    | 0.01    | 226  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | 0.01    | 0.13    | 0.00    | 0.00    | 0.04    | 0.04    | 0.00    | 0.01    | 0.01    | — | 41.9 | 41.9 | < 0.005 | < 0.005 | 0.05    | 42.1 |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.63 | 4.63 | < 0.005 | < 0.005 | < 0.005 | 4.85 |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 38.2 | 38.2 | 0.01    | 0.01    | 0.02    | 40.3 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 6.94 | 6.94 | < 0.005 | < 0.005 | 0.01    | 6.97 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.77 | 0.77 | < 0.005 | < 0.005 | < 0.005 | 0.80 |
| Hauling             | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 6.33 | 6.33 | < 0.005 | < 0.005 | < 0.005 | 6.67 |

3.87. Paving - CPS (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite              | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road Equipment  | 1.10 | 0.92 | 7.97 | 12.9 | 0.02 | 0.30  | —     | 0.30  | 0.27   | —      | 0.27   | —    | 2,366 | 2,366 | 0.10 | 0.02 | —    | 2,374 |
| Onsite truck        | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent | 0.19    | 0.16    | 1.37    | 2.22    | < 0.005 | 0.05    | —       | 0.05    | 0.05    | —       | 0.05    | — | 408  | 408  | 0.02    | < 0.005 | —       | 410  |
| Onsite truck        | 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    | 0.00 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipm ent | 0.03    | 0.03    | 0.25    | 0.41    | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 67.6 | 67.6 | < 0.005 | < 0.005 | —       | 67.8 |
| Onsite truck        | 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    | 0.00 |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.07    | 0.06    | 0.05    | 0.75    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 233  | 233  | < 0.005 | < 0.005 | 0.01    | 233  |
| Vendor              | 0.01    | < 0.005 | 0.07    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 50.0 | 50.0 | 0.01    | 0.01    | < 0.005 | 52.4 |
| Hauling             | 0.02    | < 0.005 | 0.15    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 103  | 103  | 0.02    | 0.02    | < 0.005 | 109  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | 0.01    | 0.12    | 0.00    | 0.00    | 0.04    | 0.04    | 0.00    | 0.01    | 0.01    | — | 40.2 | 40.2 | < 0.005 | < 0.005 | 0.04    | 40.4 |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 8.63 | 8.63 | < 0.005 | < 0.005 | 0.01    | 9.04 |
| Hauling             | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.8 | 17.8 | < 0.005 | < 0.005 | 0.01    | 18.8 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 6.66 | 6.66 | < 0.005 | < 0.005 | 0.01    | 6.68 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.43 | 1.43 | < 0.005 | < 0.005 | < 0.005 | 1.50 |
| Hauling             | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.95 | 2.95 | < 0.005 | < 0.005 | < 0.005 | 3.11 |

## 3.88. Paving - CPS (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T   | PM2.5E  | PM2.5D | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|---------------------|------|------|------|------|---------|---------|-------|---------|---------|--------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite              | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.29 | 0.29 | 4.05 | 15.0 | 0.02    | 0.05    | —     | 0.05    | 0.05    | —      | 0.05    | —    | 2,366 | 2,366 | 0.10    | 0.02    | —    | 2,374 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.05 | 0.05 | 0.70 | 2.59 | < 0.005 | 0.01    | —     | 0.01    | 0.01    | —      | 0.01    | —    | 408   | 408   | 0.02    | < 0.005 | —    | 410   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.01 | 0.01 | 0.13 | 0.47 | < 0.005 | < 0.005 | —     | < 0.005 | < 0.005 | —      | < 0.005 | —    | 67.6  | 67.6  | < 0.005 | < 0.005 | —    | 67.8  |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |



|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.07    | 0.06    | 0.05    | 0.75    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 233  | 233  | < 0.005 | < 0.005 | 0.01    | 233  |
| Vendor              | 0.01    | < 0.005 | 0.07    | 0.06    | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | — | 50.0 | 50.0 | 0.01    | 0.01    | < 0.005 | 52.4 |
| Hauling             | 0.02    | < 0.005 | 0.15    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 103  | 103  | 0.02    | 0.02    | < 0.005 | 109  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | 0.01    | 0.12    | 0.00    | 0.00    | 0.04    | 0.04    | 0.00    | 0.01    | 0.01    | — | 40.2 | 40.2 | < 0.005 | < 0.005 | 0.04    | 40.4 |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 8.63 | 8.63 | < 0.005 | < 0.005 | 0.01    | 9.04 |
| Hauling             | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.8 | 17.8 | < 0.005 | < 0.005 | 0.01    | 18.8 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 6.66 | 6.66 | < 0.005 | < 0.005 | 0.01    | 6.68 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.43 | 1.43 | < 0.005 | < 0.005 | < 0.005 | 1.50 |
| Hauling             | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.95 | 2.95 | < 0.005 | < 0.005 | < 0.005 | 3.11 |

### 3.89. Grading - SRPS (2038) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|---------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|---|-------|
| Onsite              | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Daily, Winter (Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipment  | 0.53 | 0.44 | 4.05 | 8.29 | 0.01 | 0.09  | —     | 0.09  | 0.08   | —      | 0.08   | —    | 1,272 | 1,272 | 0.05 | 0.01 | — | 1,277 |

|                             |      |      |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|------|------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | 0.10    | 0.10    | —       | 0.01    | 0.01    | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Average Daily               | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | 0.10 | 0.08 | 0.73 | 1.49 | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 229  | 229  | 0.01    | < 0.005 | —       | 230  |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | 0.02    | 0.02    | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Annual                      | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | 0.02 | 0.01 | 0.13 | 0.27 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 37.9 | 37.9 | < 0.005 | < 0.005 | —       | 38.1 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.06 | 0.06 | 0.04 | 0.59 | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 216  | 216  | < 0.005 | < 0.005 | < 0.005 | 216  |

|                  |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor           | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | < 0.005 | 19.8 |
| Hauling          | 0.02    | < 0.005 | 0.19    | 0.24    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 160  | 160  | 0.02    | 0.03    | < 0.005 | 169  |
| Average<br>Daily | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker           | 0.01    | 0.01    | 0.01    | 0.10    | 0.00    | 0.00    | 0.04    | 0.04    | 0.00    | 0.01    | 0.01    | — | 38.9 | 38.9 | < 0.005 | < 0.005 | 0.01    | 39.0 |
| Vendor           | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.40 | 3.40 | < 0.005 | < 0.005 | < 0.005 | 3.57 |
| Hauling          | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.8 | 28.8 | < 0.005 | < 0.005 | 0.01    | 30.4 |
| Annual           | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker           | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 6.44 | 6.44 | < 0.005 | < 0.005 | < 0.005 | 6.46 |
| Vendor           | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.56 | 0.56 | < 0.005 | < 0.005 | < 0.005 | 0.59 |
| Hauling          | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.78 | 4.78 | < 0.005 | < 0.005 | < 0.005 | 5.03 |

3.90. Grading - SRPS (2038) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                          | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R    | CO2e  |
|-----------------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|------|-------|
| Onsite                            | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily,<br>Summer<br>(Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Daily,<br>Winter<br>(Max)         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | —    | —     |
| Off-Road<br>Equipm<br>ent         | 0.19 | 0.18 | 3.51 | 8.86 | 0.01 | 0.03  | —     | 0.03  | 0.03   | —      | 0.03   | —    | 1,272 | 1,272 | 0.05 | 0.01 | —    | 1,277 |
| Dust From<br>Material<br>Movement | —    | —    | —    | —    | —    | —     | 0.10  | 0.10  | —      | 0.01   | 0.01   | —    | —     | —     | —    | —    | —    | —     |
| Onsite<br>truck                   | 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 | 0.00  |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | 0.03    | 0.03    | 0.63 | 1.60 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 229  | 229  | 0.01    | < 0.005 | —       | 230  |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | 0.02    | 0.02    | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | 0.01    | 0.01    | 0.12 | 0.29 | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 37.9 | 37.9 | < 0.005 | < 0.005 | —       | 38.1 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.06    | 0.06    | 0.04 | 0.59 | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 216  | 216  | < 0.005 | < 0.005 | < 0.005 | 216  |
| Vendor                      | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.9 | 18.9 | < 0.005 | < 0.005 | < 0.005 | 19.8 |
| Hauling                     | 0.02    | < 0.005 | 0.19 | 0.24 | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 160  | 160  | 0.02    | 0.03    | < 0.005 | 169  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.01    | 0.01    | 0.01 | 0.10 | 0.00    | 0.00    | 0.04    | 0.04    | 0.00    | 0.01    | 0.01    | — | 38.9 | 38.9 | < 0.005 | < 0.005 | 0.01    | 39.0 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.40 | 3.40 | < 0.005 | < 0.005 | < 0.005 | 3.57 |
| Hauling | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.8 | 28.8 | < 0.005 | < 0.005 | 0.01    | 30.4 |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 6.44 | 6.44 | < 0.005 | < 0.005 | < 0.005 | 6.46 |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.56 | 0.56 | < 0.005 | < 0.005 | < 0.005 | 0.59 |
| Hauling | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.78 | 4.78 | < 0.005 | < 0.005 | < 0.005 | 5.03 |

3.91. Grading - SRPS (2039) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|-----------------------------|------|------|------|------|---------|-------|-------|-------|---------|--------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite                      | —    | —    | —    | —    | —       | —     | —     | —     | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —       | —     | —     | —     | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —     | —     | —     | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.52 | 0.44 | 3.97 | 8.28 | 0.01    | 0.09  | —     | 0.09  | 0.08    | —      | 0.08    | —    | 1,272 | 1,272 | 0.05    | 0.01    | —    | 1,277 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —     | 0.10  | 0.10  | —       | 0.01   | 0.01    | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —     | —     | —     | —       | —      | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.03 | 0.03 | 0.24 | 0.50 | < 0.005 | 0.01  | —     | 0.01  | < 0.005 | —      | < 0.005 | —    | 77.2  | 77.2  | < 0.005 | < 0.005 | —    | 77.5  |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | 0.01    | 0.01    | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | 0.01    | < 0.005 | 0.04    | 0.09    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 12.8 | 12.8 | < 0.005 | < 0.005 | —       | 12.8 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.06    | 0.05    | 0.04    | 0.57    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 214  | 214  | < 0.005 | < 0.005 | < 0.005 | 215  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.3 | 18.3 | < 0.005 | < 0.005 | < 0.005 | 19.1 |
| Hauling                     | 0.02    | < 0.005 | 0.18    | 0.23    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 155  | 155  | 0.02    | 0.03    | < 0.005 | 163  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.03    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 13.0 | 13.0 | < 0.005 | < 0.005 | < 0.005 | 13.1 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.11 | 1.11 | < 0.005 | < 0.005 | < 0.005 | 1.16 |
| Hauling                     | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 9.42 | 9.42 | < 0.005 | < 0.005 | < 0.005 | 9.92 |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 2.15 | 2.15 | < 0.005 | < 0.005 | < 0.005 | 2.16 |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.18 | 0.18 | < 0.005 | < 0.005 | < 0.005 | 0.19 |
| Hauling | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.56 | 1.56 | < 0.005 | < 0.005 | < 0.005 | 1.64 |

3.92. Grading - SRPS (2039) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|-----------------------------|------|------|------|------|---------|---------|-------|---------|---------|---------|---------|------|-------|-------|---------|---------|------|-------|
| Onsite                      | —    | —    | —    | —    | —       | —       | —     | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —       | —       | —     | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Daily, Winter (Max)         | —    | —    | —    | —    | —       | —       | —     | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.19 | 0.18 | 3.51 | 8.86 | 0.01    | 0.03    | —     | 0.03    | 0.03    | —       | 0.03    | —    | 1,272 | 1,272 | 0.05    | 0.01    | —    | 1,277 |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | 0.10  | 0.10    | —       | 0.01    | 0.01    | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |
| Average Daily               | —    | —    | —    | —    | —       | —       | —     | —       | —       | —       | —       | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment          | 0.01 | 0.01 | 0.21 | 0.54 | < 0.005 | < 0.005 | —     | < 0.005 | < 0.005 | —       | < 0.005 | —    | 77.2  | 77.2  | < 0.005 | < 0.005 | —    | 77.5  |
| Dust From Material Movement | —    | —    | —    | —    | —       | —       | 0.01  | 0.01    | —       | < 0.005 | < 0.005 | —    | —     | —     | —       | —       | —    | —     |
| Onsite truck                | 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 | 0.00  |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Off-Road Equipment          | < 0.005 | < 0.005 | 0.04    | 0.10    | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —       | < 0.005 | — | 12.8 | 12.8 | < 0.005 | < 0.005 | —       | 12.8 |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —    | —    | —       | —       | —       | —    |
| Onsite truck                | 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    | 0.00 |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | 0.06    | 0.05    | 0.04    | 0.57    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 214  | 214  | < 0.005 | < 0.005 | < 0.005 | 215  |
| Vendor                      | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.3 | 18.3 | < 0.005 | < 0.005 | < 0.005 | 19.1 |
| Hauling                     | 0.02    | < 0.005 | 0.18    | 0.23    | < 0.005 | < 0.005 | 0.06    | 0.06    | < 0.005 | 0.02    | 0.02    | — | 155  | 155  | 0.02    | 0.03    | < 0.005 | 163  |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.03    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 13.0 | 13.0 | < 0.005 | < 0.005 | < 0.005 | 13.1 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.11 | 1.11 | < 0.005 | < 0.005 | < 0.005 | 1.16 |
| Hauling                     | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 9.42 | 9.42 | < 0.005 | < 0.005 | < 0.005 | 9.92 |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker                      | < 0.005 | < 0.005 | < 0.005 | 0.01    | 0.00    | 0.00    | < 0.005 | < 0.005 | 0.00    | < 0.005 | < 0.005 | — | 2.15 | 2.15 | < 0.005 | < 0.005 | < 0.005 | 2.16 |
| Vendor                      | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.18 | 0.18 | < 0.005 | < 0.005 | < 0.005 | 0.19 |
| Hauling                     | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.56 | 1.56 | < 0.005 | < 0.005 | < 0.005 | 1.64 |

3.93. Paving - SRPS (2040) - Unmitigated



Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R    | CO2e  |
|---------------------|------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|-------|---------|---------|------|-------|
| Onsite              | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.88 | 0.74 | 6.16 | 12.4 | 0.02    | 0.16  | —     | 0.16  | 0.15   | —      | 0.15   | —    | 2,366 | 2,366 | 0.10    | 0.02    | —    | 2,374 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.88 | 0.74 | 6.16 | 12.4 | 0.02    | 0.16  | —     | 0.16  | 0.15   | —      | 0.15   | —    | 2,366 | 2,366 | 0.10    | 0.02    | —    | 2,374 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.21 | 0.17 | 1.45 | 2.92 | 0.01    | 0.04  | —     | 0.04  | 0.04   | —      | 0.04   | —    | 557   | 557   | 0.02    | < 0.005 | —    | 559   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.04 | 0.03 | 0.26 | 0.53 | < 0.005 | 0.01  | —     | 0.01  | 0.01   | —      | 0.01   | —    | 92.3  | 92.3  | < 0.005 | < 0.005 | —    | 92.6  |
| Onsite truck        | 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 | 0.00  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.04    | 0.03    | 0.63    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 225  | 225  | < 0.005 | < 0.005 | 0.13    | 226  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | 0.01    | 18.5 |
| Hauling             | 0.01    | < 0.005 | 0.08    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5 | 75.5 | 0.01    | 0.01    | 0.04    | 79.3 |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.04    | 0.04    | 0.57    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 213  | 213  | < 0.005 | < 0.005 | < 0.005 | 214  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | < 0.005 | 18.5 |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5 | 75.5 | 0.01    | 0.01    | < 0.005 | 79.3 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | 0.01    | 0.13    | 0.00    | 0.00    | 0.06    | 0.06    | 0.00    | 0.01    | 0.01    | — | 50.2 | 50.2 | < 0.005 | < 0.005 | 0.01    | 50.4 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.16 | 4.16 | < 0.005 | < 0.005 | < 0.005 | 4.36 |
| Hauling             | < 0.005 | < 0.005 | 0.02    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.8 | 17.8 | < 0.005 | < 0.005 | < 0.005 | 18.7 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 8.32 | 8.32 | < 0.005 | < 0.005 | < 0.005 | 8.35 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.69 | 0.69 | < 0.005 | < 0.005 | < 0.005 | 0.72 |
| Hauling             | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.94 | 2.94 | < 0.005 | < 0.005 | < 0.005 | 3.09 |

3.94. Paving - SRPS (2040) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                     |         |         |      |      |         |         |      |         |         |         |         |   |       |       |         |         |      |       |
|---------------------|---------|---------|------|------|---------|---------|------|---------|---------|---------|---------|---|-------|-------|---------|---------|------|-------|
| Off-Road            | 0.29    | 0.29    | 4.05 | 15.0 | 0.02    | 0.05    | —    | 0.05    | 0.05    | —       | 0.05    | — | 2,366 | 2,366 | 0.10    | 0.02    | —    | 2,374 |
| Onsite truck        | 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 | 0.00  |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.29    | 0.29    | 4.05 | 15.0 | 0.02    | 0.05    | —    | 0.05    | 0.05    | —       | 0.05    | — | 2,366 | 2,366 | 0.10    | 0.02    | —    | 2,374 |
| Onsite truck        | 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 | 0.00  |
| Average Daily       | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.07    | 0.07    | 0.95 | 3.53 | 0.01    | 0.01    | —    | 0.01    | 0.01    | —       | 0.01    | — | 557   | 557   | 0.02    | < 0.005 | —    | 559   |
| Onsite truck        | 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 | 0.00  |
| Annual              | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Off-Road Equipment  | 0.01    | 0.01    | 0.17 | 0.64 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —       | < 0.005 | — | 92.3  | 92.3  | < 0.005 | < 0.005 | —    | 92.6  |
| Onsite truck        | 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 | 0.00  |
| Offsite             | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —    | —       | —       | —       | —       | — | —     | —     | —       | —       | —    | —     |
| Worker              | 0.05    | 0.04    | 0.03 | 0.63 | 0.00    | 0.00    | 0.25 | 0.25    | 0.00    | 0.06    | 0.06    | — | 225   | 225   | < 0.005 | < 0.005 | 0.13 | 226   |
| Vendor              | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.01 | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7  | 17.7  | < 0.005 | < 0.005 | 0.01 | 18.5  |
| Hauling             | 0.01    | < 0.005 | 0.08 | 0.11 | < 0.005 | < 0.005 | 0.03 | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5  | 75.5  | 0.01    | 0.01    | 0.04 | 79.3  |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.05    | 0.04    | 0.04    | 0.57    | 0.00    | 0.00    | 0.25    | 0.25    | 0.00    | 0.06    | 0.06    | — | 213  | 213  | < 0.005 | < 0.005 | < 0.005 | 214  |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7 | 17.7 | < 0.005 | < 0.005 | < 0.005 | 18.5 |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5 | 75.5 | 0.01    | 0.01    | < 0.005 | 79.3 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | 0.01    | 0.01    | 0.01    | 0.13    | 0.00    | 0.00    | 0.06    | 0.06    | 0.00    | 0.01    | 0.01    | — | 50.2 | 50.2 | < 0.005 | < 0.005 | 0.01    | 50.4 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 4.16 | 4.16 | < 0.005 | < 0.005 | < 0.005 | 4.36 |
| Hauling             | < 0.005 | < 0.005 | 0.02    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.8 | 17.8 | < 0.005 | < 0.005 | < 0.005 | 18.7 |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.02    | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 8.32 | 8.32 | < 0.005 | < 0.005 | < 0.005 | 8.35 |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 0.69 | 0.69 | < 0.005 | < 0.005 | < 0.005 | 0.72 |
| Hauling             | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.94 | 2.94 | < 0.005 | < 0.005 | < 0.005 | 3.09 |

3.95. Building Construction - SRPS (2039) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|---------------------|---------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|---------|---------|---------|-------|
| Onsite              | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 1.61    | 1.34    | 13.9 | 19.3 | 0.04    | 0.19    | —     | 0.19  | 0.17    | —      | 0.17   | —    | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 4.14  | 4.14  | < 0.005 | < 0.005 | < 0.005 | 4.37  |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipment  | 1.61    | 1.34    | 13.9    | 19.3    | 0.04    | 0.19    | —    | 0.19 | 0.17    | —       | 0.17    | — | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.37 | 0.37 | < 0.005 | 0.04    | 0.04    | — | 4.15  | 4.15  | < 0.005 | < 0.005 | < 0.005 | 4.38  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 1.05    | 0.88    | 9.09    | 12.6    | 0.02    | 0.12    | —    | 0.12 | 0.11    | —       | 0.11    | — | 2,253 | 2,253 | 0.09    | 0.02    | —       | 2,261 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.23 | 0.23 | < 0.005 | 0.02    | 0.02    | — | 2.71  | 2.71  | < 0.005 | < 0.005 | < 0.005 | 2.86  |
| Annual              | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.19    | 0.16    | 1.66    | 2.31    | < 0.005 | 0.02    | —    | 0.02 | 0.02    | —       | 0.02    | — | 373   | 373   | 0.02    | < 0.005 | —       | 374   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.04 | < 0.005 | < 0.005 | < 0.005 | — | 0.45  | 0.45  | < 0.005 | < 0.005 | < 0.005 | 0.47  |
| Offsite             | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.26    | 0.25    | 0.12    | 3.01    | 0.00    | 0.00    | 1.16 | 1.16 | 0.00    | 0.27    | 0.27    | — | 1,057 | 1,057 | 0.01    | 0.01    | 0.70    | 1,059 |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 18.2  | 18.2  | < 0.005 | < 0.005 | 0.01    | 19.1  |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | 0.01    | 0.01    | — | 77.7  | 77.7  | 0.01    | 0.01    | 0.04    | 81.8  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.26    | 0.22    | 0.17    | 2.68    | 0.00    | 0.00    | 1.16 | 1.16 | 0.00    | 0.27    | 0.27    | — | 999   | 999   | 0.01    | 0.01    | 0.02    | 1,002 |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 18.3  | 18.3  | < 0.005 | < 0.005 | < 0.005 | 19.1  |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | 0.01    | 0.01    | — | 77.7  | 77.7  | 0.01    | 0.01    | < 0.005 | 81.7  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|         |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Worker  | 0.17    | 0.14    | 0.09    | 1.72    | 0.00    | 0.00    | 0.75    | 0.75    | 0.00    | 0.18    | 0.18    | — | 654  | 654  | 0.01    | 0.01    | 0.20    | 657  |
| Vendor  | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 11.9 | 11.9 | < 0.005 | < 0.005 | < 0.005 | 12.5 |
| Hauling | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 50.8 | 50.8 | 0.01    | 0.01    | 0.01    | 53.4 |
| Annual  | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.03    | 0.03    | 0.02    | 0.31    | 0.00    | 0.00    | 0.14    | 0.14    | 0.00    | 0.03    | 0.03    | — | 108  | 108  | < 0.005 | < 0.005 | 0.03    | 109  |
| Vendor  | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.98 | 1.98 | < 0.005 | < 0.005 | < 0.005 | 2.07 |
| Hauling | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 8.40 | 8.40 | < 0.005 | < 0.005 | < 0.005 | 8.84 |

### 3.96. Building Construction - SRPS (2039) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|---------------------|---------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|---------|---------|---------|-------|
| Onsite              | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.65    | 0.61    | 10.6 | 22.4 | 0.04    | 0.12    | —     | 0.12  | 0.11    | —      | 0.11   | —    | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 4.14  | 4.14  | < 0.005 | < 0.005 | < 0.005 | 4.37  |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.65    | 0.61    | 10.6 | 22.4 | 0.04    | 0.12    | —     | 0.12  | 0.11    | —      | 0.11   | —    | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 4.15  | 4.15  | < 0.005 | < 0.005 | < 0.005 | 4.38  |
| Average Daily       | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road            | 0.42    | 0.40    | 6.95    | 14.6    | 0.02    | 0.08    | —       | 0.08    | 0.07    | —       | 0.07    | — | 2,253 | 2,253 | 0.09    | 0.02    | —       | 2,261 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.23    | 0.23    | < 0.005 | 0.02    | 0.02    | — | 2.71  | 2.71  | < 0.005 | < 0.005 | < 0.005 | 2.86  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.08    | 0.07    | 1.27    | 2.67    | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 373   | 373   | 0.02    | < 0.005 | —       | 374   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.04    | 0.04    | < 0.005 | < 0.005 | < 0.005 | — | 0.45  | 0.45  | < 0.005 | < 0.005 | < 0.005 | 0.47  |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.26    | 0.25    | 0.12    | 3.01    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,057 | 1,057 | 0.01    | 0.01    | 0.70    | 1,059 |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.2  | 18.2  | < 0.005 | < 0.005 | 0.01    | 19.1  |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 77.7  | 77.7  | 0.01    | 0.01    | 0.04    | 81.8  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.26    | 0.22    | 0.17    | 2.68    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 999   | 999   | 0.01    | 0.01    | 0.02    | 1,002 |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 18.3  | 18.3  | < 0.005 | < 0.005 | < 0.005 | 19.1  |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 77.7  | 77.7  | 0.01    | 0.01    | < 0.005 | 81.7  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.17    | 0.14    | 0.09    | 1.72    | 0.00    | 0.00    | 0.75    | 0.75    | 0.00    | 0.18    | 0.18    | — | 654   | 654   | 0.01    | 0.01    | 0.20    | 657   |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 11.9  | 11.9  | < 0.005 | < 0.005 | < 0.005 | 12.5  |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 50.8  | 50.8  | 0.01    | 0.01    | 0.01    | 53.4  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.03    | 0.03    | 0.02    | 0.31    | 0.00    | 0.00    | 0.14    | 0.14    | 0.00    | 0.03    | 0.03    | — | 108   | 108   | < 0.005 | < 0.005 | 0.03    | 109   |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.98  | 1.98  | < 0.005 | < 0.005 | < 0.005 | 2.07  |

|         |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Hauling | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 8.40 | 8.40 | < 0.005 | < 0.005 | < 0.005 | 8.84 |
|---------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|

### 3.97. Building Construction - SRPS (2040) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|---------------------|---------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|---------|---------|---------|-------|
| Onsite              | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 1.60    | 1.34    | 13.9 | 19.3 | 0.04    | 0.18    | —     | 0.18  | 0.17    | —      | 0.17   | —    | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 4.06  | 4.06  | < 0.005 | < 0.005 | < 0.005 | 4.28  |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 1.60    | 1.34    | 13.9 | 19.3 | 0.04    | 0.18    | —     | 0.18  | 0.17    | —      | 0.17   | —    | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 4.07  | 4.07  | < 0.005 | < 0.005 | < 0.005 | 4.30  |
| Average Daily       | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.77    | 0.64    | 6.62 | 9.23 | 0.02    | 0.09    | —     | 0.09  | 0.08    | —      | 0.08   | —    | 1,646 | 1,646 | 0.07    | 0.01    | —       | 1,652 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.17  | 0.17  | < 0.005 | 0.02   | 0.02   | —    | 1.94  | 1.94  | < 0.005 | < 0.005 | < 0.005 | 2.05  |
| Annual              | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |



|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipm     | 0.14    | 0.12    | 1.21    | 1.68    | < 0.005 | 0.02    | —       | 0.02    | 0.01    | —       | 0.01    | — | 273   | 273   | 0.01    | < 0.005 | —       | 273   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | < 0.005 | — | 0.32  | 0.32  | < 0.005 | < 0.005 | < 0.005 | 0.34  |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.25    | 0.21    | 0.12    | 2.96    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,050 | 1,050 | 0.01    | 0.01    | 0.58    | 1,053 |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7  | 17.7  | < 0.005 | < 0.005 | 0.01    | 18.5  |
| Hauling             | 0.01    | < 0.005 | 0.08    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5  | 75.5  | 0.01    | 0.01    | 0.04    | 79.3  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.24    | 0.20    | 0.17    | 2.66    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 993   | 993   | 0.01    | 0.01    | 0.02    | 996   |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7  | 17.7  | < 0.005 | < 0.005 | < 0.005 | 18.5  |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5  | 75.5  | 0.01    | 0.01    | < 0.005 | 79.3  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.12    | 0.10    | 0.06    | 1.23    | 0.00    | 0.00    | 0.55    | 0.55    | 0.00    | 0.13    | 0.13    | — | 475   | 475   | 0.01    | < 0.005 | 0.12    | 477   |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 8.43  | 8.43  | < 0.005 | < 0.005 | < 0.005 | 8.84  |
| Hauling             | < 0.005 | < 0.005 | 0.04    | 0.05    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 36.0  | 36.0  | < 0.005 | 0.01    | 0.01    | 37.9  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.02    | 0.02    | 0.01    | 0.22    | 0.00    | 0.00    | 0.10    | 0.10    | 0.00    | 0.02    | 0.02    | — | 78.7  | 78.7  | < 0.005 | < 0.005 | 0.02    | 78.9  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.40  | 1.40  | < 0.005 | < 0.005 | < 0.005 | 1.46  |
| Hauling             | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 5.97  | 5.97  | < 0.005 | < 0.005 | < 0.005 | 6.27  |

3.98. Building Construction - SRPS (2040) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|

|                     |         |         |         |         |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite              | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.65    | 0.61    | 10.6    | 22.4    | 0.04    | 0.12    | —    | 0.12 | 0.11    | —       | 0.11    | — | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.37 | 0.37 | < 0.005 | 0.04    | 0.04    | — | 4.06  | 4.06  | < 0.005 | < 0.005 | < 0.005 | 4.28  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.65    | 0.61    | 10.6    | 22.4    | 0.04    | 0.12    | —    | 0.12 | 0.11    | —       | 0.11    | — | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.37 | 0.37 | < 0.005 | 0.04    | 0.04    | — | 4.07  | 4.07  | < 0.005 | < 0.005 | < 0.005 | 4.30  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.31    | 0.29    | 5.07    | 10.7    | 0.02    | 0.06    | —    | 0.06 | 0.05    | —       | 0.05    | — | 1,646 | 1,646 | 0.07    | 0.01    | —       | 1,652 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.17 | 0.17 | < 0.005 | 0.02    | 0.02    | — | 1.94  | 1.94  | < 0.005 | < 0.005 | < 0.005 | 2.05  |
| Annual              | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.06    | 0.05    | 0.93    | 1.95    | < 0.005 | 0.01    | —    | 0.01 | 0.01    | —       | 0.01    | — | 273   | 273   | 0.01    | < 0.005 | —       | 273   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | < 0.005 | — | 0.32  | 0.32  | < 0.005 | < 0.005 | < 0.005 | 0.34  |
| Offsite             | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.25    | 0.21    | 0.12    | 2.96    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,050 | 1,050 | 0.01    | 0.01    | 0.58    | 1,053 |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7  | 17.7  | < 0.005 | < 0.005 | 0.01    | 18.5  |
| Hauling             | 0.01    | < 0.005 | 0.08    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5  | 75.5  | 0.01    | 0.01    | 0.04    | 79.3  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.24    | 0.20    | 0.17    | 2.66    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 993   | 993   | 0.01    | 0.01    | 0.02    | 996   |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 17.7  | 17.7  | < 0.005 | < 0.005 | < 0.005 | 18.5  |
| Hauling             | 0.01    | < 0.005 | 0.09    | 0.11    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 75.5  | 75.5  | 0.01    | 0.01    | < 0.005 | 79.3  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.12    | 0.10    | 0.06    | 1.23    | 0.00    | 0.00    | 0.55    | 0.55    | 0.00    | 0.13    | 0.13    | — | 475   | 475   | 0.01    | < 0.005 | 0.12    | 477   |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 8.43  | 8.43  | < 0.005 | < 0.005 | < 0.005 | 8.84  |
| Hauling             | < 0.005 | < 0.005 | 0.04    | 0.05    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 36.0  | 36.0  | < 0.005 | 0.01    | 0.01    | 37.9  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.02    | 0.02    | 0.01    | 0.22    | 0.00    | 0.00    | 0.10    | 0.10    | 0.00    | 0.02    | 0.02    | — | 78.7  | 78.7  | < 0.005 | < 0.005 | 0.02    | 78.9  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.40  | 1.40  | < 0.005 | < 0.005 | < 0.005 | 1.46  |
| Hauling             | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 5.97  | 5.97  | < 0.005 | < 0.005 | < 0.005 | 6.27  |

### 3.99. Building Construction - LMPs (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                     |      |         |      |      |         |         |      |         |         |      |         |   |      |      |         |         |      |      |
|---------------------|------|---------|------|------|---------|---------|------|---------|---------|------|---------|---|------|------|---------|---------|------|------|
| Off-Road Equipm     | 0.40 | 0.33    | 2.45 | 3.15 | < 0.005 | 0.07    | —    | 0.07    | 0.06    | —    | 0.06    | — | 385  | 385  | 0.02    | < 0.005 | —    | 387  |
| Onsite truck        | 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 | 0.00 |
| Daily, Winter (Max) | —    | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipm ent | 0.40 | 0.33    | 2.45 | 3.15 | < 0.005 | 0.07    | —    | 0.07    | 0.06    | —    | 0.06    | — | 385  | 385  | 0.02    | < 0.005 | —    | 387  |
| Onsite truck        | 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 | 0.00 |
| Average Daily       | —    | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipm ent | 0.14 | 0.12    | 0.88 | 1.14 | < 0.005 | 0.02    | —    | 0.02    | 0.02    | —    | 0.02    | — | 139  | 139  | 0.01    | < 0.005 | —    | 140  |
| Onsite truck        | 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 | 0.00 |
| Annual              | —    | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipm ent | 0.03 | 0.02    | 0.16 | 0.21 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —    | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | —    | 23.2 |
| Onsite truck        | 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 | 0.00 |
| Offsite             | —    | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Daily, Summer (Max) | —    | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.06 | 0.05    | 0.04 | 0.69 | 0.00    | 0.00    | 0.17 | 0.17    | 0.00    | 0.04 | 0.04    | — | 177  | 177  | < 0.005 | < 0.005 | 0.62 | 178  |
| Vendor              | 0.02 | < 0.005 | 0.19 | 0.13 | < 0.005 | < 0.005 | 0.03 | 0.03    | < 0.005 | 0.01 | 0.01    | — | 118  | 118  | 0.02    | 0.02    | 0.26 | 124  |
| Hauling             | 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 | 0.00 |

|                     |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |      |      |
|---------------------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|------|
| Daily, Winter (Max) | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.06    | 0.05    | 0.04    | 0.63 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168  | 168  | < 0.005 | 0.01    | 0.02 | 170  |
| Vendor              | 0.02    | < 0.005 | 0.20    | 0.13 | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 118  | 118  | 0.02    | 0.02    | 0.01 | 124  |
| Hauling             | 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 | 0.00 |
| Average Daily       | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.02    | 0.02    | 0.02    | 0.22 | 0.00    | 0.00    | 0.06    | 0.06    | 0.00    | 0.01    | 0.01    | — | 60.7 | 60.7 | < 0.005 | < 0.005 | 0.10 | 61.5 |
| Vendor              | 0.01    | < 0.005 | 0.07    | 0.05 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 42.6 | 42.6 | 0.01    | 0.01    | 0.04 | 44.8 |
| Hauling             | 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 | 0.00 |
| Annual              | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 10.1 | 10.1 | < 0.005 | < 0.005 | 0.02 | 10.2 |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 7.06 | 7.06 | < 0.005 | < 0.005 | 0.01 | 7.41 |
| Hauling             | 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 | 0.00 |

3.100. Building Construction - LMPS (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG  | ROG  | NOx  | CO   | SO2     | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O     | R    | CO2e |
|---------------------|------|------|------|------|---------|-------|-------|-------|--------|--------|--------|------|-------|------|------|---------|------|------|
| Onsite              | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    | —    |
| Daily, Summer (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    | —    |
| Off-Road Equipm ent | 0.06 | 0.06 | 1.87 | 2.78 | < 0.005 | 0.01  | —     | 0.01  | 0.01   | —      | 0.01   | —    | 385   | 385  | 0.02 | < 0.005 | —    | 387  |
| Onsite truck        | 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 | 0.00 |
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —       | —    | —    |

|                     |         |         |      |      |         |         |      |         |         |      |         |   |      |      |         |         |      |      |
|---------------------|---------|---------|------|------|---------|---------|------|---------|---------|------|---------|---|------|------|---------|---------|------|------|
| Off-Road Equipment  | 0.06    | 0.06    | 1.87 | 2.78 | < 0.005 | 0.01    | —    | 0.01    | 0.01    | —    | 0.01    | — | 385  | 385  | 0.02    | < 0.005 | —    | 387  |
| Onsite truck        | 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 | 0.00 |
| Average Daily       | —       | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipment  | 0.02    | 0.02    | 0.67 | 1.01 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —    | < 0.005 | — | 139  | 139  | 0.01    | < 0.005 | —    | 140  |
| Onsite truck        | 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 | 0.00 |
| Annual              | —       | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Off-Road Equipment  | < 0.005 | < 0.005 | 0.12 | 0.18 | < 0.005 | < 0.005 | —    | < 0.005 | < 0.005 | —    | < 0.005 | — | 23.1 | 23.1 | < 0.005 | < 0.005 | —    | 23.2 |
| Onsite truck        | 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 | 0.00 |
| Offsite             | —       | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.06    | 0.05    | 0.04 | 0.69 | 0.00    | 0.00    | 0.17 | 0.17    | 0.00    | 0.04 | 0.04    | — | 177  | 177  | < 0.005 | < 0.005 | 0.62 | 178  |
| Vendor              | 0.02    | < 0.005 | 0.19 | 0.13 | < 0.005 | < 0.005 | 0.03 | 0.03    | < 0.005 | 0.01 | 0.01    | — | 118  | 118  | 0.02    | 0.02    | 0.26 | 124  |
| Hauling             | 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 | 0.00 |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |
| Worker              | 0.06    | 0.05    | 0.04 | 0.63 | 0.00    | 0.00    | 0.17 | 0.17    | 0.00    | 0.04 | 0.04    | — | 168  | 168  | < 0.005 | 0.01    | 0.02 | 170  |
| Vendor              | 0.02    | < 0.005 | 0.20 | 0.13 | < 0.005 | < 0.005 | 0.03 | 0.03    | < 0.005 | 0.01 | 0.01    | — | 118  | 118  | 0.02    | 0.02    | 0.01 | 124  |
| Hauling             | 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 | 0.00 |
| Average Daily       | —       | —       | —    | —    | —       | —       | —    | —       | —       | —    | —       | — | —    | —    | —       | —       | —    | —    |

|         |         |         |         |      |         |         |         |         |         |         |         |   |      |      |         |         |      |      |
|---------|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|------|------|
| Worker  | 0.02    | 0.02    | 0.02    | 0.22 | 0.00    | 0.00    | 0.06    | 0.06    | 0.00    | 0.01    | 0.01    | — | 60.7 | 60.7 | < 0.005 | < 0.005 | 0.10 | 61.5 |
| Vendor  | 0.01    | < 0.005 | 0.07    | 0.05 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 42.6 | 42.6 | 0.01    | 0.01    | 0.04 | 44.8 |
| Hauling | 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 | 0.00 |
| Annual  | —       | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —    | —    |
| Worker  | < 0.005 | < 0.005 | < 0.005 | 0.04 | 0.00    | 0.00    | 0.01    | 0.01    | 0.00    | < 0.005 | < 0.005 | — | 10.1 | 10.1 | < 0.005 | < 0.005 | 0.02 | 10.2 |
| Vendor  | < 0.005 | < 0.005 | 0.01    | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 7.06 | 7.06 | < 0.005 | < 0.005 | 0.01 | 7.41 |
| Hauling | 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 | 0.00 |

### 3.101. Building Construction - CPS (2030) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|---------------------|---------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|---------|---------|---------|-------|
| Onsite              | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 1.84    | 1.54    | 15.4 | 19.9 | 0.04    | 0.33    | —     | 0.33  | 0.30    | —      | 0.30   | —    | 3,448 | 3,448 | 0.14    | 0.03    | —       | 3,460 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 5.20  | 5.20  | < 0.005 | < 0.005 | 0.01    | 5.50  |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 1.84    | 1.54    | 15.4 | 19.9 | 0.04    | 0.33    | —     | 0.33  | 0.30    | —      | 0.30   | —    | 3,448 | 3,448 | 0.14    | 0.03    | —       | 3,460 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 5.19  | 5.19  | < 0.005 | < 0.005 | < 0.005 | 5.49  |
| Average Daily       | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road            | 0.76    | 0.64    | 6.38    | 8.21    | 0.01    | 0.14    | —       | 0.14    | 0.12    | —       | 0.12    | — | 1,424 | 1,424 | 0.06    | 0.01    | —       | 1,428 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.15    | 0.15    | < 0.005 | 0.01    | 0.01    | — | 2.15  | 2.15  | < 0.005 | < 0.005 | < 0.005 | 2.27  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.14    | 0.12    | 1.16    | 1.50    | < 0.005 | 0.02    | —       | 0.02    | 0.02    | —       | 0.02    | — | 236   | 236   | 0.01    | < 0.005 | —       | 237   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | < 0.005 | — | 0.36  | 0.36  | < 0.005 | < 0.005 | < 0.005 | 0.38  |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.32    | 0.32    | 0.21    | 3.97    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,159 | 1,159 | 0.02    | 0.01    | 2.76    | 1,165 |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0  | 26.0  | < 0.005 | < 0.005 | 0.04    | 27.3  |
| Hauling             | 0.02    | < 0.005 | 0.15    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 107   | 107   | 0.02    | 0.02    | 0.15    | 113   |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.32    | 0.31    | 0.26    | 3.60    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,096 | 1,096 | 0.02    | 0.01    | 0.07    | 1,100 |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0  | 26.0  | < 0.005 | < 0.005 | < 0.005 | 27.2  |
| Hauling             | 0.02    | < 0.005 | 0.16    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 107   | 107   | 0.02    | 0.02    | < 0.005 | 113   |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.13    | 0.13    | 0.09    | 1.44    | 0.00    | 0.00    | 0.47    | 0.47    | 0.00    | 0.11    | 0.11    | — | 453   | 453   | 0.01    | < 0.005 | 0.49    | 455   |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 10.7  | 10.7  | < 0.005 | < 0.005 | 0.01    | 11.2  |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 44.3  | 44.3  | 0.01    | 0.01    | 0.03    | 46.7  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.02    | 0.02    | 0.02    | 0.26    | 0.00    | 0.00    | 0.09    | 0.09    | 0.00    | 0.02    | 0.02    | — | 75.1  | 75.1  | < 0.005 | < 0.005 | 0.08    | 75.4  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.78  | 1.78  | < 0.005 | < 0.005 | < 0.005 | 1.86  |



|         |         |         |      |      |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Hauling | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 7.33 | 7.33 | < 0.005 | < 0.005 | < 0.005 | 7.73 |
|---------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|

### 3.102. Building Construction - CPS (2030) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG     | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T | PM2.5E  | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R       | CO2e  |
|---------------------|---------|---------|------|------|---------|---------|-------|-------|---------|--------|--------|------|-------|-------|---------|---------|---------|-------|
| Onsite              | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.65    | 0.61    | 10.6 | 22.4 | 0.04    | 0.12    | —     | 0.12  | 0.11    | —      | 0.11   | —    | 3,448 | 3,448 | 0.14    | 0.03    | —       | 3,460 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 5.20  | 5.20  | < 0.005 | < 0.005 | 0.01    | 5.50  |
| Daily, Winter (Max) | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.65    | 0.61    | 10.6 | 22.4 | 0.04    | 0.12    | —     | 0.12  | 0.11    | —      | 0.11   | —    | 3,448 | 3,448 | 0.14    | 0.03    | —       | 3,460 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | 0.37  | 0.37  | < 0.005 | 0.04   | 0.04   | —    | 5.19  | 5.19  | < 0.005 | < 0.005 | < 0.005 | 5.49  |
| Average Daily       | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment  | 0.27    | 0.25    | 4.39 | 9.24 | 0.01    | 0.05    | —     | 0.05  | 0.05    | —      | 0.05   | —    | 1,424 | 1,424 | 0.06    | 0.01    | —       | 1,428 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.15  | 0.15  | < 0.005 | 0.01   | 0.01   | —    | 2.15  | 2.15  | < 0.005 | < 0.005 | < 0.005 | 2.27  |
| Annual              | —       | —       | —    | —    | —       | —       | —     | —     | —       | —      | —      | —    | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipm     | 0.05    | 0.05    | 0.80    | 1.69    | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 236   | 236   | 0.01    | < 0.005 | —       | 237   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | < 0.005 | — | 0.36  | 0.36  | < 0.005 | < 0.005 | < 0.005 | 0.38  |
| Offsite             | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.32    | 0.32    | 0.21    | 3.97    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,159 | 1,159 | 0.02    | 0.01    | 2.76    | 1,165 |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0  | 26.0  | < 0.005 | < 0.005 | 0.04    | 27.3  |
| Hauling             | 0.02    | < 0.005 | 0.15    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 107   | 107   | 0.02    | 0.02    | 0.15    | 113   |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.32    | 0.31    | 0.26    | 3.60    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,096 | 1,096 | 0.02    | 0.01    | 0.07    | 1,100 |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.0  | 26.0  | < 0.005 | < 0.005 | < 0.005 | 27.2  |
| Hauling             | 0.02    | < 0.005 | 0.16    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 107   | 107   | 0.02    | 0.02    | < 0.005 | 113   |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.13    | 0.13    | 0.09    | 1.44    | 0.00    | 0.00    | 0.47    | 0.47    | 0.00    | 0.11    | 0.11    | — | 453   | 453   | 0.01    | < 0.005 | 0.49    | 455   |
| Vendor              | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 10.7  | 10.7  | < 0.005 | < 0.005 | 0.01    | 11.2  |
| Hauling             | 0.01    | < 0.005 | 0.06    | 0.07    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 44.3  | 44.3  | 0.01    | 0.01    | 0.03    | 46.7  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.02    | 0.02    | 0.02    | 0.26    | 0.00    | 0.00    | 0.09    | 0.09    | 0.00    | 0.02    | 0.02    | — | 75.1  | 75.1  | < 0.005 | < 0.005 | 0.08    | 75.4  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 1.78  | 1.78  | < 0.005 | < 0.005 | < 0.005 | 1.86  |
| Hauling             | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 7.33  | 7.33  | < 0.005 | < 0.005 | < 0.005 | 7.73  |

### 3.103. Building Construction - CPS (2031) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|

|                     |         |         |         |         |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite              | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 1.80    | 1.50    | 15.2    | 19.8    | 0.04    | 0.30    | —    | 0.30 | 0.28    | —       | 0.28    | — | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02    | 0.01    | < 0.005 | < 0.005 | 0.37 | 0.37 | < 0.005 | 0.04    | 0.04    | — | 5.06  | 5.06  | < 0.005 | < 0.005 | < 0.005 | 5.35  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 1.80    | 1.50    | 15.2    | 19.8    | 0.04    | 0.30    | —    | 0.30 | 0.28    | —       | 0.28    | — | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.37 | 0.37 | < 0.005 | 0.04    | 0.04    | — | 5.06  | 5.06  | < 0.005 | < 0.005 | < 0.005 | 5.34  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 0.97    | 0.81    | 8.21    | 10.7    | 0.02    | 0.16    | —    | 0.16 | 0.15    | —       | 0.15    | — | 1,862 | 1,862 | 0.08    | 0.02    | —       | 1,868 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.19 | 0.19 | < 0.005 | 0.02    | 0.02    | — | 2.73  | 2.73  | < 0.005 | < 0.005 | < 0.005 | 2.89  |
| Annual              | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 0.18    | 0.15    | 1.50    | 1.95    | < 0.005 | 0.03    | —    | 0.03 | 0.03    | —       | 0.03    | — | 308   | 308   | 0.01    | < 0.005 | —       | 309   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | < 0.005 | — | 0.45  | 0.45  | < 0.005 | < 0.005 | < 0.005 | 0.48  |
| Offsite             | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.31    | 0.31    | 0.17    | 3.83    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,147 | 1,147 | 0.02    | 0.01    | 2.43    | 1,153 |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0  | 25.0  | < 0.005 | < 0.005 | 0.03    | 26.2  |
| Hauling             | 0.02    | < 0.005 | 0.14    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 103   | 103   | 0.02    | 0.02    | 0.14    | 109   |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.31    | 0.30    | 0.22    | 3.48    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,085 | 1,085 | 0.02    | 0.01    | 0.06    | 1,089 |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0  | 25.0  | < 0.005 | < 0.005 | < 0.005 | 26.2  |
| Hauling             | 0.02    | < 0.005 | 0.15    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 103   | 103   | 0.02    | 0.02    | < 0.005 | 109   |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.16    | 0.16    | 0.12    | 1.82    | 0.00    | 0.00    | 0.62    | 0.62    | 0.00    | 0.14    | 0.14    | — | 587   | 587   | 0.01    | 0.01    | 0.57    | 590   |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 13.5  | 13.5  | < 0.005 | < 0.005 | 0.01    | 14.1  |
| Hauling             | 0.01    | < 0.005 | 0.08    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 55.8  | 55.8  | 0.01    | 0.01    | 0.03    | 58.8  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.03    | 0.03    | 0.02    | 0.33    | 0.00    | 0.00    | 0.11    | 0.11    | 0.00    | 0.03    | 0.03    | — | 97.2  | 97.2  | < 0.005 | < 0.005 | 0.09    | 97.6  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.24  | 2.24  | < 0.005 | < 0.005 | < 0.005 | 2.34  |
| Hauling             | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 9.24  | 9.24  | < 0.005 | < 0.005 | 0.01    | 9.74  |

3.104. Building Construction - CPS (2031) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                     |         |         |         |         |         |         |      |      |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|------|------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipm     | 0.65    | 0.61    | 10.6    | 22.4    | 0.04    | 0.12    | —    | 0.12 | 0.11    | —       | 0.11    | — | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02    | 0.01    | < 0.005 | < 0.005 | 0.37 | 0.37 | < 0.005 | 0.04    | 0.04    | — | 5.06  | 5.06  | < 0.005 | < 0.005 | < 0.005 | 5.35  |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 0.65    | 0.61    | 10.6    | 22.4    | 0.04    | 0.12    | —    | 0.12 | 0.11    | —       | 0.11    | — | 3,447 | 3,447 | 0.14    | 0.03    | —       | 3,459 |
| Onsite truck        | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.37 | 0.37 | < 0.005 | 0.04    | 0.04    | — | 5.06  | 5.06  | < 0.005 | < 0.005 | < 0.005 | 5.34  |
| Average Daily       | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 0.35    | 0.33    | 5.74    | 12.1    | 0.02    | 0.06    | —    | 0.06 | 0.06    | —       | 0.06    | — | 1,862 | 1,862 | 0.08    | 0.02    | —       | 1,868 |
| Onsite truck        | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.19 | 0.19 | < 0.005 | 0.02    | 0.02    | — | 2.73  | 2.73  | < 0.005 | < 0.005 | < 0.005 | 2.89  |
| Annual              | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent | 0.06    | 0.06    | 1.05    | 2.21    | < 0.005 | 0.01    | —    | 0.01 | 0.01    | —       | 0.01    | — | 308   | 308   | 0.01    | < 0.005 | —       | 309   |
| Onsite truck        | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | < 0.005 | < 0.005 | — | 0.45  | 0.45  | < 0.005 | < 0.005 | < 0.005 | 0.48  |
| Offsite             | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —    | —    | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.31    | 0.31    | 0.17    | 3.83    | 0.00    | 0.00    | 1.16 | 1.16 | 0.00    | 0.27    | 0.27    | — | 1,147 | 1,147 | 0.02    | 0.01    | 2.43    | 1,153 |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | — | 25.0  | 25.0  | < 0.005 | < 0.005 | 0.03    | 26.2  |
| Hauling             | 0.02    | < 0.005 | 0.14    | 0.16    | < 0.005 | < 0.005 | 0.03 | 0.03 | < 0.005 | 0.01    | 0.01    | — | 103   | 103   | 0.02    | 0.02    | 0.14    | 109   |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.31    | 0.30    | 0.22    | 3.48    | 0.00    | 0.00    | 1.16    | 1.16    | 0.00    | 0.27    | 0.27    | — | 1,085 | 1,085 | 0.02    | 0.01    | 0.06    | 1,089 |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 25.0  | 25.0  | < 0.005 | < 0.005 | < 0.005 | 26.2  |
| Hauling             | 0.02    | < 0.005 | 0.15    | 0.16    | < 0.005 | < 0.005 | 0.03    | 0.03    | < 0.005 | 0.01    | 0.01    | — | 103   | 103   | 0.02    | 0.02    | < 0.005 | 109   |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.16    | 0.16    | 0.12    | 1.82    | 0.00    | 0.00    | 0.62    | 0.62    | 0.00    | 0.14    | 0.14    | — | 587   | 587   | 0.01    | 0.01    | 0.57    | 590   |
| Vendor              | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 13.5  | 13.5  | < 0.005 | < 0.005 | 0.01    | 14.1  |
| Hauling             | 0.01    | < 0.005 | 0.08    | 0.08    | < 0.005 | < 0.005 | 0.02    | 0.02    | < 0.005 | < 0.005 | 0.01    | — | 55.8  | 55.8  | 0.01    | 0.01    | 0.03    | 58.8  |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.03    | 0.03    | 0.02    | 0.33    | 0.00    | 0.00    | 0.11    | 0.11    | 0.00    | 0.03    | 0.03    | — | 97.2  | 97.2  | < 0.005 | < 0.005 | 0.09    | 97.6  |
| Vendor              | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 2.24  | 2.24  | < 0.005 | < 0.005 | < 0.005 | 2.34  |
| Hauling             | < 0.005 | < 0.005 | 0.01    | 0.02    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 9.24  | 9.24  | < 0.005 | < 0.005 | 0.01    | 9.74  |

3.105. Paving - initial pipes (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D   | PM10T   | PM2.5E | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|-----------------------------|------|------|------|------|------|-------|---------|---------|--------|---------|---------|------|-------|-------|------|------|---|-------|
| Onsite                      | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Daily, Summer (Max)         | —    | —    | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |
| Off-Road Equipm ent         | 1.19 | 0.99 | 8.00 | 10.2 | 0.02 | 0.31  | —       | 0.31    | 0.29   | —       | 0.29    | —    | 1,473 | 1,473 | 0.06 | 0.01 | — | 1,478 |
| Dust From Material Movement | —    | —    | —    | —    | —    | —     | < 0.005 | < 0.005 | —      | < 0.005 | < 0.005 | —    | —     | —     | —    | —    | — | —     |
| Paving                      | 0.10 | 0.10 | —    | —    | —    | —     | —       | —       | —      | —       | —       | —    | —     | —     | —    | —    | — | —     |

|                             |      |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 17.3  | 17.3  | 0.01    | < 0.005 | 0.02    | 18.3  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 1.19 | 0.99    | 8.00 | 10.2 | 0.02    | 0.31    | —       | 0.31    | 0.29    | —       | 0.29    | — | 1,473 | 1,473 | 0.06    | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.07 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 17.2  | 17.2  | 0.01    | < 0.005 | < 0.005 | 18.2  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.85 | 0.71    | 5.71 | 7.26 | 0.01    | 0.22    | —       | 0.22    | 0.20    | —       | 0.20    | — | 1,052 | 1,052 | 0.04    | 0.01    | —       | 1,056 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07 | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.05 | 0.03 | < 0.005 | < 0.005 | 0.75    | 0.75    | < 0.005 | 0.08    | 0.08    | — | 12.3  | 12.3  | < 0.005 | < 0.005 | 0.01    | 13.0  |
| Annual                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.16 | 0.13    | 1.04 | 1.33 | < 0.005 | 0.04    | —       | 0.04    | 0.04    | —       | 0.04    | — | 174   | 174   | 0.01    | < 0.005 | —       | 175   |

|                             |         |         |      |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —    | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01    | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 2.04  | 2.04  | < 0.005 | < 0.005 | < 0.005 | 2.16  |
| Offsite                     | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.69    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 177   | 177   | < 0.005 | < 0.005 | 0.62    | 178   |
| Vendor                      | 0.01    | < 0.005 | 0.05 | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | 0.07    | 30.9  |
| Hauling                     | 0.27    | 0.03    | 1.85 | 1.61    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,106 | 1,106 | 0.24    | 0.18    | 1.98    | 1,168 |
| Daily, Winter (Max)         | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.63    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | 0.01    | 0.02    | 170   |
| Vendor                      | 0.01    | < 0.005 | 0.05 | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | < 0.005 | 30.9  |
| Hauling                     | 0.27    | 0.03    | 1.96 | 1.60    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,106 | 1,106 | 0.24    | 0.18    | 0.05    | 1,166 |
| Average Daily               | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.04    | 0.03 | 0.44    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 120   | 120   | < 0.005 | < 0.005 | 0.19    | 122   |
| Vendor                      | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.1  | 21.1  | < 0.005 | < 0.005 | 0.02    | 22.1  |
| Hauling                     | 0.19    | 0.02    | 1.38 | 1.14    | 0.01    | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 790   | 790   | 0.17    | 0.13    | 0.61    | 833   |
| Annual                      | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.01    | 0.01    | 0.01 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.9  | 19.9  | < 0.005 | < 0.005 | 0.03    | 20.1  |
| Vendor                      | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.49  | 3.49  | < 0.005 | < 0.005 | < 0.005 | 3.66  |
| Hauling                     | 0.04    | < 0.005 | 0.25 | 0.21    | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 131   | 131   | 0.03    | 0.02    | 0.10    | 138   |

3.106. Paving - initial pipes (2026) - Mitigated



Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R       | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|------|---------|---------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 0.36 | 0.32    | 4.58 | 10.1 | 0.02    | 0.07    | —       | 0.07    | 0.07    | —       | 0.07    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 17.3  | 17.3  | 0.01 | < 0.005 | 0.02    | 18.3  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 0.36 | 0.32    | 4.58 | 10.1 | 0.02    | 0.07    | —       | 0.07    | 0.07    | —       | 0.07    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.07 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 17.2  | 17.2  | 0.01 | < 0.005 | < 0.005 | 18.2  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 0.25 | 0.23    | 3.27 | 7.21 | 0.01    | 0.05    | —       | 0.05    | 0.05    | —       | 0.05    | —    | 1,052 | 1,052 | 0.04 | 0.01    | —       | 1,056 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07    | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.05 | 0.03 | < 0.005 | < 0.005 | 0.75    | 0.75    | < 0.005 | 0.08    | 0.08    | — | 12.3  | 12.3  | < 0.005 | < 0.005 | 0.01    | 13.0  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.05    | 0.04    | 0.60 | 1.32 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 174   | 174   | 0.01    | < 0.005 | —       | 175   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 2.04  | 2.04  | < 0.005 | < 0.005 | < 0.005 | 2.16  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.69 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 177   | 177   | < 0.005 | < 0.005 | 0.62    | 178   |
| Vendor                      | 0.01    | < 0.005 | 0.05 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | 0.07    | 30.9  |
| Hauling                     | 0.27    | 0.03    | 1.85 | 1.61 | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,106 | 1,106 | 0.24    | 0.18    | 1.98    | 1,168 |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04 | 0.63 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | 0.01    | 0.02    | 170   |
| Vendor                      | 0.01    | < 0.005 | 0.05 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 29.5  | 29.5  | < 0.005 | < 0.005 | < 0.005 | 30.9  |
| Hauling                     | 0.27    | 0.03    | 1.96 | 1.60 | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,106 | 1,106 | 0.24    | 0.18    | 0.05    | 1,166 |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|         |         |         |      |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------|---------|---------|------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Worker  | 0.04    | 0.04    | 0.03 | 0.44    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 120  | 120  | < 0.005 | < 0.005 | 0.19    | 122  |
| Vendor  | < 0.005 | < 0.005 | 0.03 | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 21.1 | 21.1 | < 0.005 | < 0.005 | 0.02    | 22.1 |
| Hauling | 0.19    | 0.02    | 1.38 | 1.14    | 0.01    | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 790  | 790  | 0.17    | 0.13    | 0.61    | 833  |
| Annual  | —       | —       | —    | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker  | 0.01    | 0.01    | 0.01 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.9 | 19.9 | < 0.005 | < 0.005 | 0.03    | 20.1 |
| Vendor  | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.49 | 3.49 | < 0.005 | < 0.005 | < 0.005 | 3.66 |
| Hauling | 0.04    | < 0.005 | 0.25 | 0.21    | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 131  | 131  | 0.03    | 0.02    | 0.10    | 138  |

3.107. Paving - initial pipes (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R    | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|------|---------|------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 1.14 | 0.96    | 7.82 | 10.2 | 0.02    | 0.28    | —       | 0.28    | 0.26    | —       | 0.26    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —    | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —    | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 16.9  | 16.9  | 0.01 | < 0.005 | 0.02 | 17.9  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 1.14 | 0.96    | 7.82 | 10.2 | 0.02    | 0.28    | —       | 0.28    | 0.26    | —       | 0.26    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —    | 1,478 |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.10    | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 16.8  | 16.8  | 0.01    | < 0.005 | < 0.005 | 17.8  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.82    | 0.68    | 5.58 | 7.25 | 0.01    | 0.20    | —       | 0.20    | 0.19    | —       | 0.19    | — | 1,052 | 1,052 | 0.04    | 0.01    | —       | 1,056 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07    | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.75    | 0.75    | < 0.005 | 0.08    | 0.08    | — | 12.1  | 12.1  | < 0.005 | < 0.005 | 0.01    | 12.8  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.15    | 0.12    | 1.02 | 1.32 | < 0.005 | 0.04    | —       | 0.04    | 0.03    | —       | 0.03    | — | 174   | 174   | 0.01    | < 0.005 | —       | 175   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 2.00  | 2.00  | < 0.005 | < 0.005 | < 0.005 | 2.11  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|                           |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Worker                    | 0.06    | 0.05    | 0.04    | 0.66    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 174   | 174   | < 0.005 | < 0.005 | 0.56    | 175   |
| Vendor                    | 0.01    | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | 0.06    | 30.2  |
| Hauling                   | 0.25    | 0.03    | 1.73    | 1.58    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,074 | 1,074 | 0.22    | 0.18    | 1.83    | 1,134 |
| Daily,<br>Winter<br>(Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                    | 0.06    | 0.05    | 0.04    | 0.60    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 165   | 165   | < 0.005 | 0.01    | 0.01    | 167   |
| Vendor                    | 0.01    | < 0.005 | 0.05    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | < 0.005 | 30.1  |
| Hauling                   | 0.25    | 0.03    | 1.82    | 1.57    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,074 | 1,074 | 0.22    | 0.18    | 0.05    | 1,132 |
| Average<br>Daily          | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                    | 0.04    | 0.03    | 0.03    | 0.41    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 118   | 118   | < 0.005 | < 0.005 | 0.17    | 119   |
| Vendor                    | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.5  | 20.5  | < 0.005 | < 0.005 | 0.02    | 21.5  |
| Hauling                   | 0.18    | 0.02    | 1.28    | 1.13    | < 0.005 | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 767   | 767   | 0.16    | 0.13    | 0.56    | 809   |
| Annual                    | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                    | 0.01    | 0.01    | < 0.005 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.03    | 19.8  |
| Vendor                    | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.40  | 3.40  | < 0.005 | < 0.005 | < 0.005 | 3.56  |
| Hauling                   | 0.03    | < 0.005 | 0.23    | 0.21    | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 127   | 127   | 0.03    | 0.02    | 0.09    | 134   |

3.108. Paving - initial pipes (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                  | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|---------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|---|-------|
| Onsite                    | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Daily,<br>Summer<br>(Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Off-Road<br>Equipment     | 0.36 | 0.32 | 4.57 | 10.1 | 0.02 | 0.07  | —     | 0.07  | 0.07   | —      | 0.07   | —    | 1,473 | 1,473 | 0.06 | 0.01 | — | 1,478 |

|                             |      |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 16.9  | 16.9  | 0.01    | < 0.005 | 0.02    | 17.9  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.36 | 0.32    | 4.57 | 10.1 | 0.02    | 0.07    | —       | 0.07    | 0.07    | —       | 0.07    | — | 1,473 | 1,473 | 0.06    | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 16.8  | 16.8  | 0.01    | < 0.005 | < 0.005 | 17.8  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.25 | 0.23    | 3.26 | 7.21 | 0.01    | 0.05    | —       | 0.05    | 0.05    | —       | 0.05    | — | 1,052 | 1,052 | 0.04    | 0.01    | —       | 1,056 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07 | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.75    | 0.75    | < 0.005 | 0.08    | 0.08    | — | 12.1  | 12.1  | < 0.005 | < 0.005 | 0.01    | 12.8  |
| Annual                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipm             | 0.05    | 0.04    | 0.60    | 1.32    | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 174   | 174   | 0.01    | < 0.005 | —       | 175   |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 2.00  | 2.00  | < 0.005 | < 0.005 | < 0.005 | 2.11  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04    | 0.66    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 174   | 174   | < 0.005 | < 0.005 | 0.56    | 175   |
| Vendor                      | 0.01    | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | 0.06    | 30.2  |
| Hauling                     | 0.25    | 0.03    | 1.73    | 1.58    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,074 | 1,074 | 0.22    | 0.18    | 1.83    | 1,134 |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.06    | 0.05    | 0.04    | 0.60    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 165   | 165   | < 0.005 | 0.01    | 0.01    | 167   |
| Vendor                      | 0.01    | < 0.005 | 0.05    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 28.7  | 28.7  | < 0.005 | < 0.005 | < 0.005 | 30.1  |
| Hauling                     | 0.25    | 0.03    | 1.82    | 1.57    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,074 | 1,074 | 0.22    | 0.18    | 0.05    | 1,132 |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.41    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 118   | 118   | < 0.005 | < 0.005 | 0.17    | 119   |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.5  | 20.5  | < 0.005 | < 0.005 | 0.02    | 21.5  |
| Hauling                     | 0.18    | 0.02    | 1.28    | 1.13    | < 0.005 | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 767   | 767   | 0.16    | 0.13    | 0.56    | 809   |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.08    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 19.5  | 19.5  | < 0.005 | < 0.005 | 0.03    | 19.8  |
| Vendor                      | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.40  | 3.40  | < 0.005 | < 0.005 | < 0.005 | 3.56  |
| Hauling                     | 0.03    | < 0.005 | 0.23    | 0.21    | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 127   | 127   | 0.03    | 0.02    | 0.09    | 134   |

## 3.109. Paving - initial pipes (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R       | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|------|---------|---------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 1.09 | 0.91    | 7.60 | 10.1 | 0.02    | 0.25    | —       | 0.25    | 0.23    | —       | 0.23    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 16.5  | 16.5  | 0.01 | < 0.005 | 0.02    | 17.4  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 1.09 | 0.91    | 7.60 | 10.1 | 0.02    | 0.25    | —       | 0.25    | 0.23    | —       | 0.23    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 16.4  | 16.4  | 0.01 | < 0.005 | < 0.005 | 17.4  |
| Average Daily               | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |



|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road                    | 0.78    | 0.65    | 5.44 | 7.25 | 0.01    | 0.18    | —       | 0.18    | 0.17    | —       | 0.17    | — | 1,055 | 1,055 | 0.04    | 0.01    | —       | 1,059 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07    | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.76    | 0.76    | < 0.005 | 0.08    | 0.08    | — | 11.8  | 11.8  | < 0.005 | < 0.005 | 0.01    | 12.5  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.14    | 0.12    | 0.99 | 1.32 | < 0.005 | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 175   | 175   | 0.01    | < 0.005 | —       | 175   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 1.95  | 1.95  | < 0.005 | < 0.005 | < 0.005 | 2.06  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03 | 0.62 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171   | 171   | < 0.005 | < 0.005 | 0.50    | 172   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | 0.05    | 29.2  |
| Hauling                     | 0.23    | 0.02    | 1.60 | 1.54 | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,039 | 1,039 | 0.21    | 0.17    | 1.68    | 1,096 |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.04 | 0.57 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | 0.01    | 0.01    | 164   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | < 0.005 | 29.2  |
| Hauling                     | 0.23    | 0.02    | 1.69 | 1.55 | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,039 | 1,039 | 0.21    | 0.17    | 0.04    | 1,094 |

|               |         |         |         |         |         |         |         |         |         |         |         |   |      |      |         |         |         |      |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|------|------|---------|---------|---------|------|
| Average Daily | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker        | 0.04    | 0.03    | 0.03    | 0.40    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116  | 116  | < 0.005 | < 0.005 | 0.15    | 117  |
| Vendor        | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0 | 20.0 | < 0.005 | < 0.005 | 0.02    | 20.9 |
| Hauling       | 0.17    | 0.02    | 1.19    | 1.11    | < 0.005 | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 744  | 744  | 0.15    | 0.12    | 0.52    | 784  |
| Annual        | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —    | —    | —       | —       | —       | —    |
| Worker        | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2 | 19.2 | < 0.005 | < 0.005 | 0.03    | 19.3 |
| Vendor        | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31 | 3.31 | < 0.005 | < 0.005 | < 0.005 | 3.46 |
| Hauling       | 0.03    | < 0.005 | 0.22    | 0.20    | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 123  | 123  | 0.02    | 0.02    | 0.09    | 130  |

### 3.110. Paving - initial pipes (2028) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R    | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|------|---------|------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Off-Road Equipment          | 0.35 | 0.32    | 4.57 | 10.1 | 0.02    | 0.07    | —       | 0.07    | 0.07    | —       | 0.07    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —    | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —    | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 16.5  | 16.5  | 0.01 | < 0.005 | 0.02 | 17.4  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —    | —     |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipm             | 0.35    | 0.32    | 4.57 | 10.1 | 0.02    | 0.07    | —       | 0.07    | 0.07    | —       | 0.07    | — | 1,473 | 1,473 | 0.06    | 0.01    | —       | 1,478 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.10    | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 16.4  | 16.4  | 0.01    | < 0.005 | < 0.005 | 17.4  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.25    | 0.23    | 3.27 | 7.23 | 0.01    | 0.05    | —       | 0.05    | 0.05    | —       | 0.05    | — | 1,055 | 1,055 | 0.04    | 0.01    | —       | 1,059 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07    | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.76    | 0.76    | < 0.005 | 0.08    | 0.08    | — | 11.8  | 11.8  | < 0.005 | < 0.005 | 0.01    | 12.5  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.05    | 0.04    | 0.60 | 1.32 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 175   | 175   | 0.01    | < 0.005 | —       | 175   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 1.95  | 1.95  | < 0.005 | < 0.005 | < 0.005 | 2.06  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |

|                     |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Daily, Summer (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.05    | 0.05    | 0.03    | 0.62    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 171   | 171   | < 0.005 | < 0.005 | 0.50    | 172   |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | 0.05    | 29.2  |
| Hauling             | 0.23    | 0.02    | 1.60    | 1.54    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,039 | 1,039 | 0.21    | 0.17    | 1.68    | 1,096 |
| Daily, Winter (Max) | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.05    | 0.05    | 0.04    | 0.57    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 162   | 162   | < 0.005 | 0.01    | 0.01    | 164   |
| Vendor              | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 27.9  | 27.9  | < 0.005 | < 0.005 | < 0.005 | 29.2  |
| Hauling             | 0.23    | 0.02    | 1.69    | 1.55    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,039 | 1,039 | 0.21    | 0.17    | 0.04    | 1,094 |
| Average Daily       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.04    | 0.03    | 0.03    | 0.40    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 116   | 116   | < 0.005 | < 0.005 | 0.15    | 117   |
| Vendor              | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 20.0  | 20.0  | < 0.005 | < 0.005 | 0.02    | 20.9  |
| Hauling             | 0.17    | 0.02    | 1.19    | 1.11    | < 0.005 | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 744   | 744   | 0.15    | 0.12    | 0.52    | 784   |
| Annual              | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker              | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | 0.01    | 0.01    | — | 19.2  | 19.2  | < 0.005 | < 0.005 | 0.03    | 19.3  |
| Vendor              | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.31  | 3.31  | < 0.005 | < 0.005 | < 0.005 | 3.46  |
| Hauling             | 0.03    | < 0.005 | 0.22    | 0.20    | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 123   | 123   | 0.02    | 0.02    | 0.09    | 130   |

### 3.111. Paving - initial pipes (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Onsite              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Off-Road Equipm             | 1.06    | 0.89    | 7.47 | 10.1 | 0.02    | 0.23    | —       | 0.23    | 0.21    | —       | 0.21    | — | 1,473 | 1,473 | 0.06    | 0.01    | —       | 1,478 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.10    | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 16.0  | 16.0  | 0.01    | < 0.005 | 0.02    | 17.0  |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 1.06    | 0.89    | 7.47 | 10.1 | 0.02    | 0.23    | —       | 0.23    | 0.21    | —       | 0.21    | — | 1,473 | 1,473 | 0.06    | 0.01    | —       | 1,478 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.10    | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | 0.01    | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | — | 16.0  | 16.0  | 0.01    | < 0.005 | < 0.005 | 16.9  |
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipm ent         | 0.76    | 0.63    | 5.33 | 7.23 | 0.01    | 0.17    | —       | 0.17    | 0.15    | —       | 0.15    | — | 1,052 | 1,052 | 0.04    | 0.01    | —       | 1,056 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07    | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.75    | 0.75    | < 0.005 | 0.08    | 0.08    | — | 11.4  | 11.4  | < 0.005 | < 0.005 | 0.01    | 12.1  |

|                             |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.14    | 0.12    | 0.97    | 1.32    | < 0.005 | 0.03    | —       | 0.03    | 0.03    | —       | 0.03    | — | 174   | 174   | 0.01    | < 0.005 | —       | 175   |
| Dust From Material Movement | —       | —       | —       | —       | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 1.89  | 1.89  | < 0.005 | < 0.005 | < 0.005 | 2.00  |
| Offsite                     | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03    | 0.59    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | < 0.005 | 0.45    | 169   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | 0.05    | 28.3  |
| Hauling                     | 0.22    | 0.02    | 1.46    | 1.50    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,001 | 1,001 | 0.19    | 0.16    | 1.52    | 1,056 |
| Daily, Winter (Max)         | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.04    | 0.54    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159   | 159   | < 0.005 | 0.01    | 0.01    | 161   |
| Vendor                      | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | < 0.005 | 28.2  |
| Hauling                     | 0.22    | 0.02    | 1.54    | 1.50    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,001 | 1,001 | 0.19    | 0.16    | 0.04    | 1,055 |
| Average Daily               | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.04    | 0.03    | 0.03    | 0.37    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114   | 114   | < 0.005 | < 0.005 | 0.14    | 114   |
| Vendor                      | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2  | 19.2  | < 0.005 | < 0.005 | 0.01    | 20.2  |
| Hauling                     | 0.15    | 0.02    | 1.08    | 1.07    | < 0.005 | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 715   | 715   | 0.13    | 0.12    | 0.47    | 754   |
| Annual                      | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9  | 18.9  | < 0.005 | < 0.005 | 0.02    | 18.9  |
| Vendor                      | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19  | 3.19  | < 0.005 | < 0.005 | < 0.005 | 3.34  |

|         |      |         |      |      |         |         |      |      |         |      |      |   |     |     |      |      |      |     |
|---------|------|---------|------|------|---------|---------|------|------|---------|------|------|---|-----|-----|------|------|------|-----|
| Hauling | 0.03 | < 0.005 | 0.20 | 0.20 | < 0.005 | < 0.005 | 0.03 | 0.04 | < 0.005 | 0.01 | 0.01 | — | 118 | 118 | 0.02 | 0.02 | 0.08 | 125 |
|---------|------|---------|------|------|---------|---------|------|------|---------|------|------|---|-----|-----|------|------|------|-----|

### 3.112. Paving - initial pipes (2029) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location                    | TOG  | ROG     | NOx  | CO   | SO2     | PM10E   | PM10D   | PM10T   | PM2.5E  | PM2.5D  | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4  | N2O     | R       | CO2e  |
|-----------------------------|------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|------|-------|-------|------|---------|---------|-------|
| Onsite                      | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Daily, Summer (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 0.35 | 0.32    | 4.56 | 10.1 | 0.02    | 0.07    | —       | 0.07    | 0.07    | —       | 0.07    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 16.0  | 16.0  | 0.01 | < 0.005 | 0.02    | 17.0  |
| Daily, Winter (Max)         | —    | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Off-Road Equipment          | 0.35 | 0.32    | 4.56 | 10.1 | 0.02    | 0.07    | —       | 0.07    | 0.07    | —       | 0.07    | —    | 1,473 | 1,473 | 0.06 | 0.01    | —       | 1,478 |
| Dust From Material Movement | —    | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | —    | —     | —     | —    | —       | —       | —     |
| Paving                      | 0.10 | 0.10    | —    | —    | —       | —       | —       | —       | —       | —       | —       | —    | —     | —     | —    | —       | —       | —     |
| Onsite truck                | 0.01 | < 0.005 | 0.06 | 0.05 | < 0.005 | < 0.005 | 1.11    | 1.11    | < 0.005 | 0.11    | 0.11    | —    | 16.0  | 16.0  | 0.01 | < 0.005 | < 0.005 | 16.9  |

|                             |         |         |      |      |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|-----------------------------|---------|---------|------|------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Average Daily               | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.25    | 0.23    | 3.26 | 7.21 | 0.01    | 0.05    | —       | 0.05    | 0.05    | —       | 0.05    | — | 1,052 | 1,052 | 0.04    | 0.01    | —       | 1,056 |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.07    | 0.07    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.75    | 0.75    | < 0.005 | 0.08    | 0.08    | — | 11.4  | 11.4  | < 0.005 | < 0.005 | 0.01    | 12.1  |
| Annual                      | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Off-Road Equipment          | 0.05    | 0.04    | 0.59 | 1.32 | < 0.005 | 0.01    | —       | 0.01    | 0.01    | —       | 0.01    | — | 174   | 174   | 0.01    | < 0.005 | —       | 175   |
| Dust From Material Movement | —       | —       | —    | —    | —       | —       | < 0.005 | < 0.005 | —       | < 0.005 | < 0.005 | — | —     | —     | —       | —       | —       | —     |
| Paving                      | 0.01    | 0.01    | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Onsite truck                | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | 0.14    | 0.14    | < 0.005 | 0.01    | 0.01    | — | 1.89  | 1.89  | < 0.005 | < 0.005 | < 0.005 | 2.00  |
| Offsite                     | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Daily, Summer (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker                      | 0.05    | 0.05    | 0.03 | 0.59 | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 168   | 168   | < 0.005 | < 0.005 | 0.45    | 169   |
| Vendor                      | < 0.005 | < 0.005 | 0.04 | 0.03 | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | 0.05    | 28.3  |
| Hauling                     | 0.22    | 0.02    | 1.46 | 1.50 | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,001 | 1,001 | 0.19    | 0.16    | 1.52    | 1,056 |
| Daily, Winter (Max)         | —       | —       | —    | —    | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |



|               |         |         |         |         |         |         |         |         |         |         |         |   |       |       |         |         |         |       |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|-------|-------|---------|---------|---------|-------|
| Worker        | 0.05    | 0.05    | 0.04    | 0.54    | 0.00    | 0.00    | 0.17    | 0.17    | 0.00    | 0.04    | 0.04    | — | 159   | 159   | < 0.005 | 0.01    | 0.01    | 161   |
| Vendor        | < 0.005 | < 0.005 | 0.04    | 0.03    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 26.9  | 26.9  | < 0.005 | < 0.005 | < 0.005 | 28.2  |
| Hauling       | 0.22    | 0.02    | 1.54    | 1.50    | 0.01    | 0.01    | 0.26    | 0.27    | 0.01    | 0.07    | 0.09    | — | 1,001 | 1,001 | 0.19    | 0.16    | 0.04    | 1,055 |
| Average Daily | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker        | 0.04    | 0.03    | 0.03    | 0.37    | 0.00    | 0.00    | 0.12    | 0.12    | 0.00    | 0.03    | 0.03    | — | 114   | 114   | < 0.005 | < 0.005 | 0.14    | 114   |
| Vendor        | < 0.005 | < 0.005 | 0.03    | 0.02    | < 0.005 | < 0.005 | 0.01    | 0.01    | < 0.005 | < 0.005 | < 0.005 | — | 19.2  | 19.2  | < 0.005 | < 0.005 | 0.01    | 20.2  |
| Hauling       | 0.15    | 0.02    | 1.08    | 1.07    | < 0.005 | 0.01    | 0.19    | 0.19    | 0.01    | 0.05    | 0.06    | — | 715   | 715   | 0.13    | 0.12    | 0.47    | 754   |
| Annual        | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | —       | — | —     | —     | —       | —       | —       | —     |
| Worker        | 0.01    | 0.01    | < 0.005 | 0.07    | 0.00    | 0.00    | 0.02    | 0.02    | 0.00    | < 0.005 | < 0.005 | — | 18.9  | 18.9  | < 0.005 | < 0.005 | 0.02    | 18.9  |
| Vendor        | < 0.005 | < 0.005 | 0.01    | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | — | 3.19  | 3.19  | < 0.005 | < 0.005 | < 0.005 | 3.34  |
| Hauling       | 0.03    | < 0.005 | 0.20    | 0.20    | < 0.005 | < 0.005 | 0.03    | 0.04    | < 0.005 | 0.01    | 0.01    | — | 118   | 118   | 0.02    | 0.02    | 0.08    | 125   |

## 4. Operations Emissions Details

### 4.1. Mobile Emissions by Land Use

#### 4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

#### 4.1.2. Mitigated

Mobile source emissions results are presented in Sections 2.5. No further detailed breakdown of emissions is available.

### 4.2. Energy

#### 4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                                 |   |   |   |   |   |   |   |   |   |   |   |   |      |      |      |         |   |      |
|---------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|------|------|------|---------|---|------|
| Other Asphalt Surfaces          | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | — | 0.00 |
| Refrigerated Warehoused-No Rail | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Total                           | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Daily, Winter (Max)             | — | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —       | — | —    |
| Other Asphalt Surfaces          | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | — | 0.00 |
| Refrigerated Warehoused-No Rail | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Total                           | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Annual                          | — | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —       | — | —    |
| Other Asphalt Surfaces          | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | — | 0.00 |
| Refrigerated Warehoused-No Rail | — | — | — | — | — | — | — | — | — | — | — | — | 41.0 | 41.0 | 0.01 | < 0.005 | — | 41.4 |
| Total                           | — | — | — | — | — | — | — | — | — | — | — | — | 41.0 | 41.0 | 0.01 | < 0.005 | — | 41.4 |

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

|          |     |     |     |    |     |       |       |       |        |        |        |      |       |      |     |     |   |      |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|

|                                |   |   |   |   |   |   |   |   |   |   |   |   |      |      |      |         |   |      |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|------|------|------|---------|---|------|
| Daily, Summer (Max)            | — | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —       | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Daily, Winter (Max)            | — | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —       | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | — | 248  | 248  | 0.04 | < 0.005 | — | 250  |
| Annual                         | — | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —       | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00    | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | — | 41.0 | 41.0 | 0.01 | < 0.005 | — | 41.4 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | — | 41.0 | 41.0 | 0.01 | < 0.005 | — | 41.4 |

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                       | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O  | R | CO2e |
|--------------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|------|------|------|---|------|
| Daily, Summer (Max)            | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | 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 |
| Refrigerated Warehouse-No Rail | 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 |
| Total                          | 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 |
| Daily, Winter (Max)            | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | 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 |
| Refrigerated Warehouse-No Rail | 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 |
| Total                          | 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 |
| Annual                         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | 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 |
| Refrigerated Warehouse-No Rail | 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 |
| Total                          | 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 |

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                       | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O  | R | CO2e |
|--------------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|------|------|------|---|------|
| Daily, Summer (Max)            | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | 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 |
| Refrigerated Warehouse-No Rail | 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 |
| Total                          | 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 |
| Daily, Winter (Max)            | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | 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 |
| Refrigerated Warehouse-No Rail | 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 |
| Total                          | 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 |
| Annual                         | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | 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 |

|                                |      |      |      |      |      |      |   |      |      |   |      |   |      |      |      |      |   |      |
|--------------------------------|------|------|------|------|------|------|---|------|------|---|------|---|------|------|------|------|---|------|
| Refrigerated Warehouse-No Rail | 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 |
| Total                          | 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 |

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Source                 | TOG  | ROG  | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|------------------------|------|------|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max)    | —    | —    | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Consumer Products      | 0.54 | 0.54 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Architectural Coatings | 0.00 | 0.00 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                  | 0.54 | 0.54 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max)    | —    | —    | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Consumer Products      | 0.54 | 0.54 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Architectural Coatings | 0.00 | 0.00 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                  | 0.54 | 0.54 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------------|------|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual                 | —    | —    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products      | 0.10 | 0.10 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.00 | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total                  | 0.10 | 0.10 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Source                 | TOG  | ROG  | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|------------------------|------|------|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max)    | —    | —    | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Consumer Products      | 0.54 | 0.54 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Architectural Coatings | 0.00 | 0.00 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                  | 0.54 | 0.54 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max)    | —    | —    | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Consumer Products      | 0.54 | 0.54 | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                          |      |      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------------------|------|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architect ural Coating s | 0.00 | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total                    | 0.54 | 0.54 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual                   | —    | —    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consum er Product s      | 0.10 | 0.10 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architect ural Coating s | 0.00 | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total                    | 0.10 | 0.10 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                         | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O  | R | CO2e |
|----------------------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|------|------|---|------|
| Daily, Summer (Max)              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces           | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refriger ated Wareho use-No Rail | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |



|                                |   |   |   |   |   |   |   |   |   |   |   |      |      |      |      |      |   |      |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|---|------|------|------|------|------|---|------|
| Daily, Winter (Max)            | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual                         | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use               | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O  | R | CO2e |
|------------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|------|------|---|------|
| Daily, Summer (Max)    | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |

|                                |   |   |   |   |   |   |   |   |   |   |   |      |      |      |      |      |   |      |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|---|------|------|------|------|------|---|------|
| Refrigerated Warehouse-No      | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max)            | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual                         | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

|          |     |     |     |    |     |       |       |       |        |        |        |      |       |      |     |     |   |      |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|----------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|

|                                |   |   |   |   |   |   |   |   |   |   |   |      |      |      |      |      |   |      |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|---|------|------|------|------|------|---|------|
| Daily, Summer (Max)            | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max)            | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual                         | — | — | — | — | — | — | — | — | — | — | — | —    | —    | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use                       | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4  | N2O  | R | CO2e |
|--------------------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|------|------|---|------|
| Daily, Summer (Max)            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max)            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual                         | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —    | —    | — | —    |
| Other Asphalt Surfaces         | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Refrigerated Warehouse-No Rail | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total                          | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.6. Refrigerant Emissions by Land Use

### 4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

### 4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipm<br>ent<br>Type     | TOG  | ROG  | NOx  | CO   | SO2     | PM10E   | PM10D | PM10T   | PM2.5E  | PM2.5D | PM2.5T  | BCO2 | NBCO2 | CO2T  | CH4     | N2O     | R | CO2e  |
|---------------------------|------|------|------|------|---------|---------|-------|---------|---------|--------|---------|------|-------|-------|---------|---------|---|-------|
| Daily,<br>Summer<br>(Max) | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | — | —     |
| Pumps                     | 4.30 | 3.55 | 38.8 | 47.0 | 0.09    | 0.50    | —     | 0.50    | 0.46    | —      | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | — | 7,033 |
| Total                     | 4.30 | 3.55 | 38.8 | 47.0 | 0.09    | 0.50    | —     | 0.50    | 0.46    | —      | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | — | 7,033 |
| Daily,<br>Winter<br>(Max) | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | — | —     |
| Pumps                     | 4.30 | 3.55 | 38.8 | 47.0 | 0.09    | 0.50    | —     | 0.50    | 0.46    | —      | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | — | 7,033 |
| Total                     | 4.30 | 3.55 | 38.8 | 47.0 | 0.09    | 0.50    | —     | 0.50    | 0.46    | —      | 0.46    | —    | 7,009 | 7,009 | 0.28    | 0.06    | — | 7,033 |
| Annual                    | —    | —    | —    | —    | —       | —       | —     | —       | —       | —      | —       | —    | —     | —     | —       | —       | — | —     |
| Pumps                     | 0.03 | 0.02 | 0.23 | 0.28 | < 0.005 | < 0.005 | —     | < 0.005 | < 0.005 | —      | < 0.005 | —    | 38.2  | 38.2  | < 0.005 | < 0.005 | — | 38.3  |
| Total                     | 0.03 | 0.02 | 0.23 | 0.28 | < 0.005 | < 0.005 | —     | < 0.005 | < 0.005 | —      | < 0.005 | —    | 38.2  | 38.2  | < 0.005 | < 0.005 | — | 38.3  |

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipm<br>ent<br>Type     | TOG  | ROG  | NOx  | CO   | SO2  | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T  | CH4  | N2O  | R | CO2e  |
|---------------------------|------|------|------|------|------|-------|-------|-------|--------|--------|--------|------|-------|-------|------|------|---|-------|
| Daily,<br>Summer<br>(Max) | —    | —    | —    | —    | —    | —     | —     | —     | —      | —      | —      | —    | —     | —     | —    | —    | — | —     |
| Pumps                     | 4.30 | 3.55 | 38.8 | 47.0 | 0.09 | 0.50  | —     | 0.50  | 0.46   | —      | 0.46   | —    | 7,009 | 7,009 | 0.28 | 0.06 | — | 7,033 |
| Total                     | 4.30 | 3.55 | 38.8 | 47.0 | 0.09 | 0.50  | —     | 0.50  | 0.46   | —      | 0.46   | —    | 7,009 | 7,009 | 0.28 | 0.06 | — | 7,033 |

|                     |      |      |      |      |         |         |   |         |         |   |         |   |       |       |         |         |   |       |
|---------------------|------|------|------|------|---------|---------|---|---------|---------|---|---------|---|-------|-------|---------|---------|---|-------|
| Daily, Winter (Max) | —    | —    | —    | —    | —       | —       | — | —       | —       | — | —       | — | —     | —     | —       | —       | — | —     |
| Pumps               | 4.30 | 3.55 | 38.8 | 47.0 | 0.09    | 0.50    | — | 0.50    | 0.46    | — | 0.46    | — | 7,009 | 7,009 | 0.28    | 0.06    | — | 7,033 |
| Total               | 4.30 | 3.55 | 38.8 | 47.0 | 0.09    | 0.50    | — | 0.50    | 0.46    | — | 0.46    | — | 7,009 | 7,009 | 0.28    | 0.06    | — | 7,033 |
| Annual              | —    | —    | —    | —    | —       | —       | — | —       | —       | — | —       | — | —     | —     | —       | —       | — | —     |
| Pumps               | 0.03 | 0.02 | 0.23 | 0.28 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 38.2  | 38.2  | < 0.005 | < 0.005 | — | 38.3  |
| Total               | 0.03 | 0.02 | 0.23 | 0.28 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 38.2  | 38.2  | < 0.005 | < 0.005 | — | 38.3  |

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipm ent Type     | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipm ent Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|-----------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
|-----------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|

|                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total               | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total               | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual              | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total               | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipm ent Type     | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)



| Equipm<br>ent             | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily,<br>Summer<br>(Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                     | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily,<br>Winter<br>(Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                     | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual                    | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                     | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Vegetati<br>on            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily,<br>Summer<br>(Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                     | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily,<br>Winter<br>(Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                     | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual                    | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total                     | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Species             | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Avoided             | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Subtotal            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Sequestered         | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Subtotal            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Removed             | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Subtotal            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| —                   | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Avoided             | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| —           | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual      | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed     | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| —           | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Vegetation          | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use            | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Daily, Winter (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Annual              | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Total               | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Species             | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---------------------|-----|-----|-----|----|-----|-------|-------|-------|--------|--------|--------|------|-------|------|-----|-----|---|------|
| Daily, Summer (Max) | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Avoided             | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Subtotal            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Sequestered         | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Subtotal            | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |
| Removed             | —   | —   | —   | —  | —   | —     | —     | —     | —      | —      | —      | —    | —     | —    | —   | —   | — | —    |

|                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subtotal                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| —                         | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily,<br>Winter<br>(Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided                   | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequest<br>ered           | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Remove<br>d               | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| —                         | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual                    | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided                   | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequest<br>ered           | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Remove<br>d               | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal                  | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| —                         | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

5. Activity Data

5.1. Construction Schedule

| Phase Name       | Phase Type | Start Date | End Date  | Days Per Week | Work Days per Phase | Phase Description |
|------------------|------------|------------|-----------|---------------|---------------------|-------------------|
| Demolition - CPS | Demolition | 1/2/2030   | 2/14/2030 | 5.00          | 32.0                | Demolition - CPS  |

|                                    |                       |           |            |      |       |                                    |
|------------------------------------|-----------------------|-----------|------------|------|-------|------------------------------------|
| Demolition - SRPS                  | Demolition            | 7/1/2038  | 8/31/2038  | 5.00 | 44.0  | Demolition - SRPS                  |
| Site Preparation - CPS             | Site Preparation      | 2/15/2030 | 3/1/2030   | 5.00 | 11.0  | Site Preparation - CPS             |
| Site Preparation - SRPS            | Site Preparation      | 9/1/2038  | 9/30/2038  | 5.00 | 22.0  | Site Preparation - SRPS            |
| Grading - initial pipes and vaults | Grading               | 1/1/2026  | 12/31/2029 | 5.00 | 1,043 | Grading - initial pipes and vaults |
| Grading - initial soil improvement | Grading               | 1/1/2026  | 7/31/2028  | 5.00 | 673   | Grading - initial soil improvement |
| Grading - initial trenchless       | Grading               | 1/1/2026  | 6/30/2027  | 5.00 | 390   | Grading - initial trenchless       |
| Grading - pipeline abandonment     | Grading               | 1/1/2026  | 1/20/2026  | 5.00 | 14.0  | Grading - pipeline abandonment     |
| Grading - subsq pipes and vaults   | Grading               | 1/1/2028  | 12/31/2040 | 5.00 | 3,391 | Grading - subsq pipes and vaults   |
| Grading - subsq trenchless         | Grading               | 1/1/2028  | 6/30/2029  | 5.00 | 390   | Grading - subsq trenchless         |
| Paving - subsq pipes               | Grading               | 1/1/2028  | 12/31/2040 | 5.00 | 3,391 | Paving - subsq pipes               |
| Grading - CPS                      | Grading               | 3/2/2030  | 6/1/2030   | 5.00 | 65.0  | Grading - CPS                      |
| Paving - CPS                       | Grading               | 10/4/2031 | 12/31/2031 | 5.00 | 63.0  | Paving - CPS                       |
| Grading - SRPS                     | Grading               | 10/1/2038 | 1/31/2039  | 5.00 | 87.0  | Grading - SRPS                     |
| Paving - SRPS                      | Grading               | 9/1/2040  | 12/31/2040 | 5.00 | 86.0  | Paving - SRPS                      |
| Building Construction - SRPS       | Building Construction | 2/1/2039  | 8/31/2040  | 5.00 | 414   | Building Construction - SRPS       |
| Building Construction - LMPS       | Building Construction | 1/1/2026  | 7/5/2026   | 5.00 | 132   | Building Construction - LMPS       |
| Building Construction - CPS        | Building Construction | 6/4/2030  | 10/3/2031  | 5.00 | 349   | Building Construction - CPS        |
| Paving - initial pipes             | Paving                | 1/1/2026  | 12/31/2029 | 5.00 | 1,043 | Paving - initial pipes             |

## 5.2. Off-Road Equipment

### 5.2.1. Unmitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|------------|----------------|-----------|-------------|----------------|---------------|------------|-------------|
|------------|----------------|-----------|-------------|----------------|---------------|------------|-------------|

|                         |                            |        |         |      |      |      |      |
|-------------------------|----------------------------|--------|---------|------|------|------|------|
| Demolition - CPS        | Tractors/Loaders/Back      | Diesel | Average | 2.00 | 6.00 | 84.0 | 0.37 |
| Demolition - CPS        | Skid Steer Loaders         | Diesel | Average | 3.00 | 6.00 | 71.0 | 0.37 |
| Demolition - CPS        | Forklifts                  | Diesel | Average | 1.00 | 6.00 | 82.0 | 0.20 |
| Demolition - CPS        | Cranes                     | Diesel | Average | 1.00 | 6.00 | 367  | 0.29 |
| Demolition - CPS        | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Demolition - CPS        | Concrete/Industrial Saws   | Diesel | Average | 1.00 | 6.00 | 33.0 | 0.73 |
| Demolition - CPS        | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Demolition - SRPS       | Tractors/Loaders/Back hoes | Diesel | Average | 2.00 | 6.00 | 84.0 | 0.37 |
| Demolition - SRPS       | Skid Steer Loaders         | Diesel | Average | 3.00 | 6.00 | 71.0 | 0.37 |
| Demolition - SRPS       | Forklifts                  | Diesel | Average | 1.00 | 6.00 | 82.0 | 0.20 |
| Demolition - SRPS       | Cranes                     | Diesel | Average | 1.00 | 6.00 | 367  | 0.29 |
| Demolition - SRPS       | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Demolition - SRPS       | Concrete/Industrial Saws   | Diesel | Average | 1.00 | 6.00 | 33.0 | 0.73 |
| Demolition - SRPS       | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Site Preparation - CPS  | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Site Preparation - CPS  | Skid Steer Loaders         | Diesel | Average | 2.00 | 6.00 | 71.0 | 0.37 |
| Site Preparation - CPS  | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Site Preparation - CPS  | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Site Preparation - CPS  | Graders                    | Diesel | Average | 1.00 | 6.00 | 148  | 0.41 |
| Site Preparation - CPS  | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Site Preparation - SRPS | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |

|                                    |                            |        |         |      |      |      |      |
|------------------------------------|----------------------------|--------|---------|------|------|------|------|
| Site Preparation - SRPS            | Skid Steer Loaders         | Diesel | Average | 2.00 | 6.00 | 71.0 | 0.37 |
| Site Preparation - SRPS            | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Site Preparation - SRPS            | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Site Preparation - SRPS            | Graders                    | Diesel | Average | 1.00 | 6.00 | 148  | 0.41 |
| Site Preparation - SRPS            | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Grading - initial pipes and vaults | Tractors/Loaders/Back hoes | Diesel | Average | 3.00 | 6.00 | 84.0 | 0.37 |
| Grading - initial pipes and vaults | Concrete/Industrial Saws   | Diesel | Average | 2.00 | 6.00 | 33.0 | 0.73 |
| Grading - initial pipes and vaults | Cranes                     | Diesel | Average | 1.00 | 4.00 | 367  | 0.29 |
| Grading - initial pipes and vaults | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - initial pipes and vaults | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Grading - initial soil improvement | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Grading - initial soil improvement | Cement and Mortar Mixers   | Diesel | Average | 1.00 | 6.00 | 10.0 | 0.56 |
| Grading - initial soil improvement | Pumps                      | Diesel | Average | 2.00 | 6.00 | 11.0 | 0.74 |
| Grading - initial soil improvement | Tractors/Loaders/Back hoes | Diesel | Average | 3.00 | 6.00 | 84.0 | 0.37 |
| Grading - initial soil improvement | Bore/Drill Rigs            | Diesel | Average | 1.00 | 6.00 | 83.0 | 0.50 |
| Grading - initial soil improvement | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - initial soil improvement | Cranes                     | Diesel | Average | 1.00 | 4.00 | 367  | 0.29 |



|                                    |                              |        |         |      |      |      |      |
|------------------------------------|------------------------------|--------|---------|------|------|------|------|
| Grading - initial soil improvement | Pavers                       | Diesel | Average | 1.00 | 6.00 | 81.0 | 0.42 |
| Grading - initial soil improvement | Concrete/Industrial Saws     | Diesel | Average | 1.00 | 6.00 | 33.0 | 0.73 |
| Grading - initial soil improvement | Scrapers                     | Diesel | Average | 1.00 | 6.00 | 423  | 0.48 |
| Grading - initial soil improvement | Generator Sets               | Diesel | Average | 1.00 | 6.00 | 14.0 | 0.74 |
| Grading - initial trenchless       | Bore/Drill Rigs              | Diesel | Average | 1.00 | 8.00 | 83.0 | 0.50 |
| Grading - initial trenchless       | Cranes                       | Diesel | Average | 1.00 | 4.00 | 367  | 0.29 |
| Grading - initial trenchless       | Welders                      | Diesel | Average | 1.00 | 6.00 | 46.0 | 0.45 |
| Grading - initial trenchless       | Other Construction Equipment | Diesel | Average | 1.00 | 8.00 | 82.0 | 0.42 |
| Grading - pipeline abandonment     | Pumps                        | Diesel | Average | 1.00 | 8.00 | 11.0 | 0.74 |
| Grading - pipeline abandonment     | Concrete/Industrial Saws     | Diesel | Average | 1.00 | 8.00 | 33.0 | 0.73 |
| Grading - pipeline abandonment     | Excavators                   | Diesel | Average | 1.00 | 8.00 | 36.0 | 0.38 |
| Grading - pipeline abandonment     | Generator Sets               | Diesel | Average | 1.00 | 8.00 | 14.0 | 0.74 |
| Grading - pipeline abandonment     | Pavers                       | Diesel | Average | 1.00 | 8.00 | 81.0 | 0.42 |
| Grading - pipeline abandonment     | Concrete/Industrial Saws     | Diesel | Average | 1.00 | 8.00 | 33.0 | 0.73 |
| Grading - pipeline abandonment     | Tractors/Loaders/Back hoes   | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |
| Grading - pipeline abandonment     | Plate Compactors             | Diesel | Average | 1.00 | 8.00 | 8.00 | 0.43 |
| Grading - pipeline abandonment     | Rollers                      | Diesel | Average | 1.00 | 8.00 | 36.0 | 0.38 |

|                                  |                              |        |         |      |      |      |      |
|----------------------------------|------------------------------|--------|---------|------|------|------|------|
| Grading - subsq pipes and vaults | Tractors/Loaders/Back hoes   | Diesel | Average | 3.00 | 6.00 | 84.0 | 0.37 |
| Grading - subsq pipes and vaults | Concrete/Industrial Saws     | Diesel | Average | 1.00 | 6.00 | 33.0 | 0.73 |
| Grading - subsq pipes and vaults | Cranes                       | Diesel | Average | 1.00 | 4.00 | 367  | 0.29 |
| Grading - subsq pipes and vaults | Excavators                   | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - subsq pipes and vaults | Sweepers/Scrubbers           | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Grading - subsq pipes and vaults | Concrete/Industrial Saws     | Diesel | Average | 1.00 | 6.00 | 33.0 | 0.73 |
| Grading - subsq trenchless       | Bore/Drill Rigs              | Diesel | Average | 1.00 | 8.00 | 83.0 | 0.50 |
| Grading - subsq trenchless       | Cranes                       | Diesel | Average | 1.00 | 4.00 | 367  | 0.29 |
| Grading - subsq trenchless       | Welders                      | Diesel | Average | 1.00 | 6.00 | 46.0 | 0.45 |
| Grading - subsq trenchless       | Other Construction Equipment | Diesel | Average | 1.00 | 8.00 | 82.0 | 0.42 |
| Paving - subsq pipes             | Tractors/Loaders/Back hoes   | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - subsq pipes             | Rollers                      | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - subsq pipes             | Sweepers/Scrubbers           | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - subsq pipes             | Pavers                       | Diesel | Average | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - subsq pipes             | Paving Equipment             | Diesel | Average | 1.00 | 6.00 | 89.0 | 0.36 |
| Paving - subsq pipes             | Plate Compactors             | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - subsq pipes             | Rollers                      | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - subsq pipes             | Pumps                        | Diesel | Average | 1.00 | 6.00 | 11.0 | 0.74 |
| Paving - subsq pipes             | Air Compressors              | Diesel | Average | 1.00 | 6.00 | 37.0 | 0.48 |
| Paving - subsq pipes             | Welders                      | Diesel | Average | 1.00 | 6.00 | 46.0 | 0.45 |
| Grading - CPS                    | Excavators                   | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |

|                |                            |        |         |      |      |      |      |
|----------------|----------------------------|--------|---------|------|------|------|------|
| Grading - CPS  | Skid Steer Loaders         | Diesel | Average | 2.00 | 6.00 | 71.0 | 0.37 |
| Grading - CPS  | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Grading - CPS  | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Grading - CPS  | Graders                    | Diesel | Average | 1.00 | 6.00 | 148  | 0.41 |
| Grading - CPS  | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - CPS   | Pavers                     | Diesel | Average | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - CPS   | Skid Steer Loaders         | Diesel | Average | 2.00 | 6.00 | 71.0 | 0.37 |
| Paving - CPS   | Rollers                    | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - CPS   | Graders                    | Diesel | Average | 1.00 | 6.00 | 148  | 0.41 |
| Paving - CPS   | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - CPS   | Forklifts                  | Diesel | Average | 1.00 | 6.00 | 82.0 | 0.20 |
| Paving - CPS   | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - CPS   | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - CPS   | Cranes                     | Diesel | Average | 1.00 | 6.00 | 367  | 0.29 |
| Grading - SRPS | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - SRPS | Skid Steer Loaders         | Diesel | Average | 2.00 | 6.00 | 71.0 | 0.37 |
| Grading - SRPS | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Grading - SRPS | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Grading - SRPS | Graders                    | Diesel | Average | 1.00 | 6.00 | 148  | 0.41 |
| Grading - SRPS | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - SRPS  | Pavers                     | Diesel | Average | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - SRPS  | Skid Steer Loaders         | Diesel | Average | 2.00 | 6.00 | 71.0 | 0.37 |
| Paving - SRPS  | Rollers                    | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - SRPS  | Graders                    | Diesel | Average | 1.00 | 6.00 | 148  | 0.41 |
| Paving - SRPS  | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - SRPS  | Forklifts                  | Diesel | Average | 1.00 | 6.00 | 82.0 | 0.20 |

|                              |                            |        |         |      |      |      |      |
|------------------------------|----------------------------|--------|---------|------|------|------|------|
| Paving - SRPS                | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - SRPS                | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - SRPS                | Cranes                     | Diesel | Average | 1.00 | 6.00 | 367  | 0.29 |
| Building Construction - SRPS | Pumps                      | Diesel | Average | 2.00 | 6.00 | 11.0 | 0.74 |
| Building Construction - SRPS | Bore/Drill Rigs            | Diesel | Average | 1.00 | 6.00 | 83.0 | 0.50 |
| Building Construction - SRPS | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Building Construction - SRPS | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Building Construction - SRPS | Cranes                     | Diesel | Average | 1.00 | 6.00 | 367  | 0.29 |
| Building Construction - SRPS | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Building Construction - SRPS | Concrete/Industrial Saws   | Diesel | Average | 1.00 | 6.00 | 33.0 | 0.73 |
| Building Construction - SRPS | Forklifts                  | Diesel | Average | 2.00 | 6.00 | 82.0 | 0.20 |
| Building Construction - SRPS | Generator Sets             | Diesel | Average | 1.00 | 6.00 | 14.0 | 0.74 |
| Building Construction - SRPS | Welders                    | Diesel | Average | 2.00 | 6.00 | 46.0 | 0.45 |
| Building Construction - SRPS | Aerial Lifts               | Diesel | Average | 7.00 | 6.00 | 46.0 | 0.31 |
| Building Construction - SRPS | Air Compressors            | Diesel | Average | 2.00 | 6.00 | 37.0 | 0.48 |
| Building Construction - LMPS | Air Compressors            | Diesel | Average | 1.00 | 8.00 | 37.0 | 0.48 |
| Building Construction - LMPS | Welders                    | Diesel | Average | 1.00 | 8.00 | 46.0 | 0.45 |
| Building Construction - CPS  | Pumps                      | Diesel | Average | 2.00 | 6.00 | 11.0 | 0.74 |

|                             |                            |        |         |      |      |      |      |
|-----------------------------|----------------------------|--------|---------|------|------|------|------|
| Building Construction - CPS | Bore/Drill Rigs            | Diesel | Average | 1.00 | 6.00 | 83.0 | 0.50 |
| Building Construction - CPS | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Building Construction - CPS | Excavators                 | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Building Construction - CPS | Cranes                     | Diesel | Average | 1.00 | 6.00 | 367  | 0.29 |
| Building Construction - CPS | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Building Construction - CPS | Concrete/Industrial Saws   | Diesel | Average | 1.00 | 6.00 | 33.0 | 0.73 |
| Building Construction - CPS | Forklifts                  | Diesel | Average | 2.00 | 6.00 | 82.0 | 0.20 |
| Building Construction - CPS | Generator Sets             | Diesel | Average | 1.00 | 6.00 | 14.0 | 0.74 |
| Building Construction - CPS | Welders                    | Diesel | Average | 2.00 | 6.00 | 46.0 | 0.45 |
| Building Construction - CPS | Aerial Lifts               | Diesel | Average | 7.00 | 6.00 | 46.0 | 0.31 |
| Building Construction - CPS | Air Compressors            | Diesel | Average | 2.00 | 6.00 | 37.0 | 0.48 |
| Paving - initial pipes      | Tractors/Loaders/Back hoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - initial pipes      | Rollers                    | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - initial pipes      | Sweepers/Scrubbers         | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - initial pipes      | Pavers                     | Diesel | Average | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - initial pipes      | Paving Equipment           | Diesel | Average | 1.00 | 6.00 | 89.0 | 0.36 |
| Paving - initial pipes      | Plate Compactors           | Diesel | Average | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - initial pipes      | Rollers                    | Diesel | Average | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - initial pipes      | Pumps                      | Diesel | Average | 1.00 | 6.00 | 11.0 | 0.74 |
| Paving - initial pipes      | Air Compressors            | Diesel | Average | 1.00 | 6.00 | 37.0 | 0.48 |
| Paving - initial pipes      | Welders                    | Diesel | Average | 1.00 | 6.00 | 46.0 | 0.45 |

|                        |                |        |         |      |      |      |      |
|------------------------|----------------|--------|---------|------|------|------|------|
| Paving - initial pipes | Generator Sets | Diesel | Average | 1.00 | 6.00 | 14.0 | 0.74 |
|------------------------|----------------|--------|---------|------|------|------|------|

### 5.2.2. Mitigated

| Phase Name             | Equipment Type             | Fuel Type | Engine Tier  | Number per Day | Hours Per Day | Horsepower | Load Factor |
|------------------------|----------------------------|-----------|--------------|----------------|---------------|------------|-------------|
| Demolition - CPS       | Tractors/Loaders/Back hoes | Diesel    | Tier 4 Final | 2.00           | 6.00          | 84.0       | 0.37        |
| Demolition - CPS       | Skid Steer Loaders         | Diesel    | Tier 4 Final | 3.00           | 6.00          | 71.0       | 0.37        |
| Demolition - CPS       | Forklifts                  | Diesel    | Tier 4 Final | 1.00           | 6.00          | 82.0       | 0.20        |
| Demolition - CPS       | Cranes                     | Diesel    | Tier 4 Final | 1.00           | 6.00          | 367        | 0.29        |
| Demolition - CPS       | Excavators                 | Diesel    | Tier 4 Final | 1.00           | 6.00          | 36.0       | 0.38        |
| Demolition - CPS       | Concrete/Industrial Saws   | Diesel    | Tier 4 Final | 1.00           | 6.00          | 33.0       | 0.73        |
| Demolition - CPS       | Sweepers/Scrubbers         | Diesel    | Tier 4 Final | 1.00           | 6.00          | 36.0       | 0.46        |
| Demolition - SRPS      | Tractors/Loaders/Back hoes | Diesel    | Tier 4 Final | 2.00           | 6.00          | 84.0       | 0.37        |
| Demolition - SRPS      | Skid Steer Loaders         | Diesel    | Tier 4 Final | 3.00           | 6.00          | 71.0       | 0.37        |
| Demolition - SRPS      | Forklifts                  | Diesel    | Tier 4 Final | 1.00           | 6.00          | 82.0       | 0.20        |
| Demolition - SRPS      | Cranes                     | Diesel    | Tier 4 Final | 1.00           | 6.00          | 367        | 0.29        |
| Demolition - SRPS      | Excavators                 | Diesel    | Tier 4 Final | 1.00           | 6.00          | 36.0       | 0.38        |
| Demolition - SRPS      | Concrete/Industrial Saws   | Diesel    | Tier 4 Final | 1.00           | 6.00          | 33.0       | 0.73        |
| Demolition - SRPS      | Sweepers/Scrubbers         | Diesel    | Tier 4 Final | 1.00           | 6.00          | 36.0       | 0.46        |
| Site Preparation - CPS | Excavators                 | Diesel    | Tier 4 Final | 1.00           | 6.00          | 36.0       | 0.38        |
| Site Preparation - CPS | Skid Steer Loaders         | Diesel    | Tier 4 Final | 2.00           | 6.00          | 71.0       | 0.37        |
| Site Preparation - CPS | Plate Compactors           | Diesel    | Average      | 1.00           | 6.00          | 8.00       | 0.43        |
| Site Preparation - CPS | Tractors/Loaders/Back hoes | Diesel    | Tier 4 Final | 1.00           | 6.00          | 84.0       | 0.37        |

|                                    |                            |        |              |      |      |      |      |
|------------------------------------|----------------------------|--------|--------------|------|------|------|------|
| Site Preparation - CPS             | Graders                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 148  | 0.41 |
| Site Preparation - CPS             | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Site Preparation - SRPS            | Excavators                 | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Site Preparation - SRPS            | Skid Steer Loaders         | Diesel | Tier 4 Final | 2.00 | 6.00 | 71.0 | 0.37 |
| Site Preparation - SRPS            | Plate Compactors           | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Site Preparation - SRPS            | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Site Preparation - SRPS            | Graders                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 148  | 0.41 |
| Site Preparation - SRPS            | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Grading - initial pipes and vaults | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 3.00 | 6.00 | 84.0 | 0.37 |
| Grading - initial pipes and vaults | Concrete/Industrial Saws   | Diesel | Tier 4 Final | 2.00 | 6.00 | 33.0 | 0.73 |
| Grading - initial pipes and vaults | Cranes                     | Diesel | Tier 4 Final | 1.00 | 4.00 | 367  | 0.29 |
| Grading - initial pipes and vaults | Excavators                 | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - initial pipes and vaults | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Grading - initial soil improvement | Plate Compactors           | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Grading - initial soil improvement | Cement and Mortar Mixers   | Diesel | Average      | 1.00 | 6.00 | 10.0 | 0.56 |
| Grading - initial soil improvement | Pumps                      | Diesel | Average      | 2.00 | 6.00 | 11.0 | 0.74 |
| Grading - initial soil improvement | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 3.00 | 6.00 | 84.0 | 0.37 |

|                                    |                              |        |              |      |      |      |      |
|------------------------------------|------------------------------|--------|--------------|------|------|------|------|
| Grading - initial soil improvement | Bore/Drill Rigs              | Diesel | Tier 4 Final | 1.00 | 6.00 | 83.0 | 0.50 |
| Grading - initial soil improvement | Excavators                   | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - initial soil improvement | Cranes                       | Diesel | Tier 4 Final | 1.00 | 4.00 | 367  | 0.29 |
| Grading - initial soil improvement | Pavers                       | Diesel | Tier 4 Final | 1.00 | 6.00 | 81.0 | 0.42 |
| Grading - initial soil improvement | Concrete/Industrial Saws     | Diesel | Tier 4 Final | 1.00 | 6.00 | 33.0 | 0.73 |
| Grading - initial soil improvement | Scrapers                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 423  | 0.48 |
| Grading - initial soil improvement | Generator Sets               | Diesel | Average      | 1.00 | 6.00 | 14.0 | 0.74 |
| Grading - initial trenchless       | Bore/Drill Rigs              | Diesel | Tier 4 Final | 1.00 | 8.00 | 83.0 | 0.50 |
| Grading - initial trenchless       | Cranes                       | Diesel | Tier 4 Final | 1.00 | 4.00 | 367  | 0.29 |
| Grading - initial trenchless       | Welders                      | Diesel | Tier 4 Final | 1.00 | 6.00 | 46.0 | 0.45 |
| Grading - initial trenchless       | Other Construction Equipment | Diesel | Tier 4 Final | 1.00 | 8.00 | 82.0 | 0.42 |
| Grading - pipeline abandonment     | Pumps                        | Diesel | Average      | 1.00 | 8.00 | 11.0 | 0.74 |
| Grading - pipeline abandonment     | Concrete/Industrial Saws     | Diesel | Tier 4 Final | 1.00 | 8.00 | 33.0 | 0.73 |
| Grading - pipeline abandonment     | Excavators                   | Diesel | Tier 4 Final | 1.00 | 8.00 | 36.0 | 0.38 |
| Grading - pipeline abandonment     | Generator Sets               | Diesel | Average      | 1.00 | 8.00 | 14.0 | 0.74 |
| Grading - pipeline abandonment     | Pavers                       | Diesel | Tier 4 Final | 1.00 | 8.00 | 81.0 | 0.42 |
| Grading - pipeline abandonment     | Concrete/Industrial Saws     | Diesel | Tier 4 Final | 1.00 | 8.00 | 33.0 | 0.73 |



|                                  |                              |        |              |      |      |      |      |
|----------------------------------|------------------------------|--------|--------------|------|------|------|------|
| Grading - pipeline abandonment   | Tractors/Loaders/Back hoes   | Diesel | Tier 4 Final | 1.00 | 8.00 | 84.0 | 0.37 |
| Grading - pipeline abandonment   | Plate Compactors             | Diesel | Average      | 1.00 | 8.00 | 8.00 | 0.43 |
| Grading - pipeline abandonment   | Rollers                      | Diesel | Tier 4 Final | 1.00 | 8.00 | 36.0 | 0.38 |
| Grading - subsq pipes and vaults | Tractors/Loaders/Back hoes   | Diesel | Tier 4 Final | 3.00 | 6.00 | 84.0 | 0.37 |
| Grading - subsq pipes and vaults | Concrete/Industrial Saws     | Diesel | Tier 4 Final | 1.00 | 6.00 | 33.0 | 0.73 |
| Grading - subsq pipes and vaults | Cranes                       | Diesel | Tier 4 Final | 1.00 | 4.00 | 367  | 0.29 |
| Grading - subsq pipes and vaults | Excavators                   | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - subsq pipes and vaults | Sweepers/Scrubbers           | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Grading - subsq pipes and vaults | Concrete/Industrial Saws     | Diesel | Tier 4 Final | 1.00 | 6.00 | 33.0 | 0.73 |
| Grading - subsq trenchless       | Bore/Drill Rigs              | Diesel | Tier 4 Final | 1.00 | 8.00 | 83.0 | 0.50 |
| Grading - subsq trenchless       | Cranes                       | Diesel | Tier 4 Final | 1.00 | 4.00 | 367  | 0.29 |
| Grading - subsq trenchless       | Welders                      | Diesel | Tier 4 Final | 1.00 | 6.00 | 46.0 | 0.45 |
| Grading - subsq trenchless       | Other Construction Equipment | Diesel | Tier 4 Final | 1.00 | 8.00 | 82.0 | 0.42 |
| Paving - subsq pipes             | Tractors/Loaders/Back hoes   | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - subsq pipes             | Rollers                      | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - subsq pipes             | Sweepers/Scrubbers           | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - subsq pipes             | Pavers                       | Diesel | Tier 4 Final | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - subsq pipes             | Paving Equipment             | Diesel | Tier 4 Final | 1.00 | 6.00 | 89.0 | 0.36 |
| Paving - subsq pipes             | Plate Compactors             | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - subsq pipes             | Rollers                      | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |

|                      |                            |        |              |      |      |      |      |
|----------------------|----------------------------|--------|--------------|------|------|------|------|
| Paving - subsq pipes | Pumps                      | Diesel | Average      | 1.00 | 6.00 | 11.0 | 0.74 |
| Paving - subsq pipes | Air Compressors            | Diesel | Tier 4 Final | 1.00 | 6.00 | 37.0 | 0.48 |
| Paving - subsq pipes | Welders                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 46.0 | 0.45 |
| Grading - CPS        | Excavators                 | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - CPS        | Skid Steer Loaders         | Diesel | Tier 4 Final | 2.00 | 6.00 | 71.0 | 0.37 |
| Grading - CPS        | Plate Compactors           | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Grading - CPS        | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Grading - CPS        | Graders                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 148  | 0.41 |
| Grading - CPS        | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - CPS         | Pavers                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - CPS         | Skid Steer Loaders         | Diesel | Tier 4 Final | 2.00 | 6.00 | 71.0 | 0.37 |
| Paving - CPS         | Rollers                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - CPS         | Graders                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 148  | 0.41 |
| Paving - CPS         | Plate Compactors           | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - CPS         | Forklifts                  | Diesel | Tier 4 Final | 1.00 | 6.00 | 82.0 | 0.20 |
| Paving - CPS         | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - CPS         | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - CPS         | Cranes                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 367  | 0.29 |
| Grading - SRPS       | Excavators                 | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Grading - SRPS       | Skid Steer Loaders         | Diesel | Tier 4 Final | 2.00 | 6.00 | 71.0 | 0.37 |
| Grading - SRPS       | Plate Compactors           | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Grading - SRPS       | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Grading - SRPS       | Graders                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 148  | 0.41 |
| Grading - SRPS       | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - SRPS        | Pavers                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - SRPS        | Skid Steer Loaders         | Diesel | Tier 4 Final | 2.00 | 6.00 | 71.0 | 0.37 |

|                              |                            |        |              |      |      |      |      |
|------------------------------|----------------------------|--------|--------------|------|------|------|------|
| Paving - SRPS                | Rollers                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - SRPS                | Graders                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 148  | 0.41 |
| Paving - SRPS                | Plate Compactors           | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - SRPS                | Forklifts                  | Diesel | Tier 4 Final | 1.00 | 6.00 | 82.0 | 0.20 |
| Paving - SRPS                | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - SRPS                | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - SRPS                | Cranes                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 367  | 0.29 |
| Building Construction - SRPS | Pumps                      | Diesel | Average      | 2.00 | 6.00 | 11.0 | 0.74 |
| Building Construction - SRPS | Bore/Drill Rigs            | Diesel | Tier 4 Final | 1.00 | 6.00 | 83.0 | 0.50 |
| Building Construction - SRPS | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Building Construction - SRPS | Excavators                 | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Building Construction - SRPS | Cranes                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 367  | 0.29 |
| Building Construction - SRPS | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Building Construction - SRPS | Concrete/Industrial Saws   | Diesel | Tier 4 Final | 1.00 | 6.00 | 33.0 | 0.73 |
| Building Construction - SRPS | Forklifts                  | Diesel | Tier 4 Final | 2.00 | 6.00 | 82.0 | 0.20 |
| Building Construction - SRPS | Generator Sets             | Diesel | Average      | 1.00 | 6.00 | 14.0 | 0.74 |
| Building Construction - SRPS | Welders                    | Diesel | Tier 4 Final | 2.00 | 6.00 | 46.0 | 0.45 |
| Building Construction - SRPS | Aerial Lifts               | Diesel | Tier 4 Final | 7.00 | 6.00 | 46.0 | 0.31 |
| Building Construction - SRPS | Air Compressors            | Diesel | Tier 4 Final | 2.00 | 6.00 | 37.0 | 0.48 |
| Building Construction - LMPS | Air Compressors            | Diesel | Tier 4 Final | 1.00 | 8.00 | 37.0 | 0.48 |

|                              |                            |        |              |      |      |      |      |
|------------------------------|----------------------------|--------|--------------|------|------|------|------|
| Building Construction - LMPs | Welders                    | Diesel | Tier 4 Final | 1.00 | 8.00 | 46.0 | 0.45 |
| Building Construction - CPS  | Pumps                      | Diesel | Average      | 2.00 | 6.00 | 11.0 | 0.74 |
| Building Construction - CPS  | Bore/Drill Rigs            | Diesel | Tier 4 Final | 1.00 | 6.00 | 83.0 | 0.50 |
| Building Construction - CPS  | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Building Construction - CPS  | Excavators                 | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Building Construction - CPS  | Cranes                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 367  | 0.29 |
| Building Construction - CPS  | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Building Construction - CPS  | Concrete/Industrial Saws   | Diesel | Tier 4 Final | 1.00 | 6.00 | 33.0 | 0.73 |
| Building Construction - CPS  | Forklifts                  | Diesel | Tier 4 Final | 2.00 | 6.00 | 82.0 | 0.20 |
| Building Construction - CPS  | Generator Sets             | Diesel | Average      | 1.00 | 6.00 | 14.0 | 0.74 |
| Building Construction - CPS  | Welders                    | Diesel | Tier 4 Final | 2.00 | 6.00 | 46.0 | 0.45 |
| Building Construction - CPS  | Aerial Lifts               | Diesel | Tier 4 Final | 7.00 | 6.00 | 46.0 | 0.31 |
| Building Construction - CPS  | Air Compressors            | Diesel | Tier 4 Final | 2.00 | 6.00 | 37.0 | 0.48 |
| Paving - initial pipes       | Tractors/Loaders/Back hoes | Diesel | Tier 4 Final | 1.00 | 6.00 | 84.0 | 0.37 |
| Paving - initial pipes       | Rollers                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |
| Paving - initial pipes       | Sweepers/Scrubbers         | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.46 |
| Paving - initial pipes       | Pavers                     | Diesel | Tier 4 Final | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving - initial pipes       | Paving Equipment           | Diesel | Tier 4 Final | 1.00 | 6.00 | 89.0 | 0.36 |
| Paving - initial pipes       | Plate Compactors           | Diesel | Average      | 1.00 | 6.00 | 8.00 | 0.43 |
| Paving - initial pipes       | Rollers                    | Diesel | Tier 4 Final | 1.00 | 6.00 | 36.0 | 0.38 |

|                        |                 |        |              |      |      |      |      |
|------------------------|-----------------|--------|--------------|------|------|------|------|
| Paving - initial pipes | Pumps           | Diesel | Average      | 1.00 | 6.00 | 11.0 | 0.74 |
| Paving - initial pipes | Air Compressors | Diesel | Tier 4 Final | 1.00 | 6.00 | 37.0 | 0.48 |
| Paving - initial pipes | Welders         | Diesel | Tier 4 Final | 1.00 | 6.00 | 46.0 | 0.45 |
| Paving - initial pipes | Generator Sets  | Diesel | Average      | 1.00 | 6.00 | 14.0 | 0.74 |

## 5.3. Construction Vehicles

### 5.3.1. Unmitigated

| Phase Name              | Trip Type    | One-Way Trips per Day | Miles per Trip | Vehicle Mix   |
|-------------------------|--------------|-----------------------|----------------|---------------|
| Demolition - CPS        | —            | —                     | —              | —             |
| Demolition - CPS        | Worker       | 30.0                  | 11.7           | LDA,LDT1,LDT2 |
| Demolition - CPS        | Vendor       | 1.00                  | 8.40           | HHDT,MHDT     |
| Demolition - CPS        | Hauling      | 2.00                  | 30.0           | HHDT          |
| Demolition - CPS        | Onsite truck | —                     | —              | HHDT          |
| Demolition - SRPS       | —            | —                     | —              | —             |
| Demolition - SRPS       | Worker       | 30.0                  | 11.7           | LDA,LDT1,LDT2 |
| Demolition - SRPS       | Vendor       | 1.00                  | 8.40           | HHDT,MHDT     |
| Demolition - SRPS       | Hauling      | 2.00                  | 30.0           | HHDT          |
| Demolition - SRPS       | Onsite truck | —                     | —              | HHDT          |
| Site Preparation - CPS  | —            | —                     | —              | —             |
| Site Preparation - CPS  | Worker       | 10.0                  | 11.7           | LDA,LDT1,LDT2 |
| Site Preparation - CPS  | Vendor       | 1.00                  | 8.40           | HHDT,MHDT     |
| Site Preparation - CPS  | Hauling      | 0.00                  | 30.0           | HHDT          |
| Site Preparation - CPS  | Onsite truck | —                     | —              | HHDT          |
| Site Preparation - SRPS | —            | —                     | —              | —             |
| Site Preparation - SRPS | Worker       | 10.0                  | 11.7           | LDA,LDT1,LDT2 |
| Site Preparation - SRPS | Vendor       | 1.00                  | 8.40           | HHDT,MHDT     |
| Site Preparation - SRPS | Hauling      | 0.00                  | 30.0           | HHDT          |

|                                    |              |      |      |               |
|------------------------------------|--------------|------|------|---------------|
| Site Preparation - SRPS            | Onsite truck | —    | —    | HHDT          |
| Grading - initial pipes and vaults | —            | —    | —    | —             |
| Grading - initial pipes and vaults | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - initial pipes and vaults | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - initial pipes and vaults | Hauling      | 10.0 | 30.0 | HHDT          |
| Grading - initial pipes and vaults | Onsite truck | 2.00 | 1.00 | HHDT          |
| Grading - initial soil improvement | —            | —    | —    | —             |
| Grading - initial soil improvement | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - initial soil improvement | Vendor       | —    | 8.40 | HHDT,MHDT     |
| Grading - initial soil improvement | Hauling      | 18.0 | 30.0 | HHDT          |
| Grading - initial soil improvement | Onsite truck | 3.00 | 1.00 | HHDT          |
| Grading - initial trenchless       | —            | —    | —    | —             |
| Grading - initial trenchless       | Worker       | 12.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - initial trenchless       | Vendor       | —    | 8.40 | HHDT,MHDT     |
| Grading - initial trenchless       | Hauling      | 0.00 | 30.0 | HHDT          |
| Grading - initial trenchless       | Onsite truck | —    | —    | HHDT          |
| Grading - pipeline abandonment     | —            | —    | —    | —             |
| Grading - pipeline abandonment     | Worker       | 10.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - pipeline abandonment     | Vendor       | 4.00 | 8.40 | HHDT,MHDT     |
| Grading - pipeline abandonment     | Hauling      | 25.0 | 30.0 | HHDT          |
| Grading - pipeline abandonment     | Onsite truck | 2.00 | 1.00 | HHDT          |
| Grading - subsq pipes and vaults   | —            | —    | —    | —             |
| Grading - subsq pipes and vaults   | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - subsq pipes and vaults   | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - subsq pipes and vaults   | Hauling      | 5.00 | 30.0 | HHDT          |
| Grading - subsq pipes and vaults   | Onsite truck | —    | —    | HHDT          |
| Grading - subsq trenchless         | —            | —    | —    | —             |
| Grading - subsq trenchless         | Worker       | 12.0 | 11.7 | LDA,LDT1,LDT2 |

|                            |              |      |      |               |
|----------------------------|--------------|------|------|---------------|
| Grading - subsq trenchless | Vendor       | —    | 8.40 | HHDT,MHDT     |
| Grading - subsq trenchless | Hauling      | 0.00 | 30.0 | HHDT          |
| Grading - subsq trenchless | Onsite truck | —    | —    | HHDT          |
| Paving - subsq pipes       | —            | —    | —    | —             |
| Paving - subsq pipes       | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - subsq pipes       | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Paving - subsq pipes       | Hauling      | 4.00 | 30.0 | HHDT          |
| Paving - subsq pipes       | Onsite truck | —    | —    | HHDT          |
| Grading - CPS              | —            | —    | —    | —             |
| Grading - CPS              | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - CPS              | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - CPS              | Hauling      | 2.00 | 30.0 | HHDT          |
| Grading - CPS              | Onsite truck | —    | —    | HHDT          |
| Paving - CPS               | —            | —    | —    | —             |
| Paving - CPS               | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - CPS               | Vendor       | 2.00 | 8.40 | HHDT,MHDT     |
| Paving - CPS               | Hauling      | 1.00 | 30.0 | HHDT          |
| Paving - CPS               | Onsite truck | —    | —    | HHDT          |
| Grading - SRPS             | —            | —    | —    | —             |
| Grading - SRPS             | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - SRPS             | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - SRPS             | Hauling      | 2.00 | 30.0 | HHDT          |
| Grading - SRPS             | Onsite truck | —    | —    | HHDT          |
| Paving - SRPS              | —            | —    | —    | —             |
| Paving - SRPS              | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - SRPS              | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Paving - SRPS              | Hauling      | 1.00 | 30.0 | HHDT          |
| Paving - SRPS              | Onsite truck | —    | —    | HHDT          |

|                              |              |      |      |               |
|------------------------------|--------------|------|------|---------------|
| Building Construction - SRPS | —            | —    | —    | —             |
| Building Construction - SRPS | Worker       | 140  | 11.7 | LDA,LDT1,LDT2 |
| Building Construction - SRPS | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Building Construction - SRPS | Hauling      | 1.00 | 30.0 | HHDT          |
| Building Construction - SRPS | Onsite truck | 1.00 | 1.00 | HHDT          |
| Building Construction - LMPS | —            | —    | —    | —             |
| Building Construction - LMPS | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Building Construction - LMPS | Vendor       | 4.00 | 8.40 | HHDT,MHDT     |
| Building Construction - LMPS | Hauling      | 0.00 | 30.0 | HHDT          |
| Building Construction - LMPS | Onsite truck | —    | —    | HHDT          |
| Building Construction - CPS  | —            | —    | —    | —             |
| Building Construction - CPS  | Worker       | 140  | 11.7 | LDA,LDT1,LDT2 |
| Building Construction - CPS  | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Building Construction - CPS  | Hauling      | 1.00 | 30.0 | HHDT          |
| Building Construction - CPS  | Onsite truck | 1.00 | 1.00 | HHDT          |
| Paving - initial pipes       | —            | —    | —    | —             |
| Paving - initial pipes       | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - initial pipes       | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Paving - initial pipes       | Hauling      | 9.00 | 30.0 | HHDT          |
| Paving - initial pipes       | Onsite truck | 3.00 | 1.00 | HHDT          |

5.3.2. Mitigated

| Phase Name       | Trip Type    | One-Way Trips per Day | Miles per Trip | Vehicle Mix   |
|------------------|--------------|-----------------------|----------------|---------------|
| Demolition - CPS | —            | —                     | —              | —             |
| Demolition - CPS | Worker       | 30.0                  | 11.7           | LDA,LDT1,LDT2 |
| Demolition - CPS | Vendor       | 1.00                  | 8.40           | HHDT,MHDT     |
| Demolition - CPS | Hauling      | 2.00                  | 30.0           | HHDT          |
| Demolition - CPS | Onsite truck | —                     | —              | HHDT          |



|                                    |              |      |      |               |
|------------------------------------|--------------|------|------|---------------|
| Demolition - SRPS                  | —            | —    | —    | —             |
| Demolition - SRPS                  | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Demolition - SRPS                  | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Demolition - SRPS                  | Hauling      | 2.00 | 30.0 | HHDT          |
| Demolition - SRPS                  | Onsite truck | —    | —    | HHDT          |
| Site Preparation - CPS             | —            | —    | —    | —             |
| Site Preparation - CPS             | Worker       | 10.0 | 11.7 | LDA,LDT1,LDT2 |
| Site Preparation - CPS             | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Site Preparation - CPS             | Hauling      | 0.00 | 30.0 | HHDT          |
| Site Preparation - CPS             | Onsite truck | —    | —    | HHDT          |
| Site Preparation - SRPS            | —            | —    | —    | —             |
| Site Preparation - SRPS            | Worker       | 10.0 | 11.7 | LDA,LDT1,LDT2 |
| Site Preparation - SRPS            | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Site Preparation - SRPS            | Hauling      | 0.00 | 30.0 | HHDT          |
| Site Preparation - SRPS            | Onsite truck | —    | —    | HHDT          |
| Grading - initial pipes and vaults | —            | —    | —    | —             |
| Grading - initial pipes and vaults | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - initial pipes and vaults | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - initial pipes and vaults | Hauling      | 10.0 | 30.0 | HHDT          |
| Grading - initial pipes and vaults | Onsite truck | 2.00 | 1.00 | HHDT          |
| Grading - initial soil improvement | —            | —    | —    | —             |
| Grading - initial soil improvement | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - initial soil improvement | Vendor       | —    | 8.40 | HHDT,MHDT     |
| Grading - initial soil improvement | Hauling      | 18.0 | 30.0 | HHDT          |
| Grading - initial soil improvement | Onsite truck | 3.00 | 1.00 | HHDT          |
| Grading - initial trenchless       | —            | —    | —    | —             |
| Grading - initial trenchless       | Worker       | 12.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - initial trenchless       | Vendor       | —    | 8.40 | HHDT,MHDT     |

|                                  |              |      |      |               |
|----------------------------------|--------------|------|------|---------------|
| Grading - initial trenchless     | Hauling      | 0.00 | 30.0 | HHDT          |
| Grading - initial trenchless     | Onsite truck | —    | —    | HHDT          |
| Grading - pipeline abandonment   | —            | —    | —    | —             |
| Grading - pipeline abandonment   | Worker       | 10.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - pipeline abandonment   | Vendor       | 4.00 | 8.40 | HHDT,MHDT     |
| Grading - pipeline abandonment   | Hauling      | 25.0 | 30.0 | HHDT          |
| Grading - pipeline abandonment   | Onsite truck | 2.00 | 1.00 | HHDT          |
| Grading - subsq pipes and vaults | —            | —    | —    | —             |
| Grading - subsq pipes and vaults | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - subsq pipes and vaults | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - subsq pipes and vaults | Hauling      | 5.00 | 30.0 | HHDT          |
| Grading - subsq pipes and vaults | Onsite truck | —    | —    | HHDT          |
| Grading - subsq trenchless       | —            | —    | —    | —             |
| Grading - subsq trenchless       | Worker       | 12.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - subsq trenchless       | Vendor       | —    | 8.40 | HHDT,MHDT     |
| Grading - subsq trenchless       | Hauling      | 0.00 | 30.0 | HHDT          |
| Grading - subsq trenchless       | Onsite truck | —    | —    | HHDT          |
| Paving - subsq pipes             | —            | —    | —    | —             |
| Paving - subsq pipes             | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - subsq pipes             | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Paving - subsq pipes             | Hauling      | 4.00 | 30.0 | HHDT          |
| Paving - subsq pipes             | Onsite truck | —    | —    | HHDT          |
| Grading - CPS                    | —            | —    | —    | —             |
| Grading - CPS                    | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - CPS                    | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - CPS                    | Hauling      | 2.00 | 30.0 | HHDT          |
| Grading - CPS                    | Onsite truck | —    | —    | HHDT          |
| Paving - CPS                     | —            | —    | —    | —             |

|                              |              |      |      |               |
|------------------------------|--------------|------|------|---------------|
| Paving - CPS                 | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - CPS                 | Vendor       | 2.00 | 8.40 | HHDT,MHDT     |
| Paving - CPS                 | Hauling      | 1.00 | 30.0 | HHDT          |
| Paving - CPS                 | Onsite truck | —    | —    | HHDT          |
| Grading - SRPS               | —            | —    | —    | —             |
| Grading - SRPS               | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading - SRPS               | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Grading - SRPS               | Hauling      | 2.00 | 30.0 | HHDT          |
| Grading - SRPS               | Onsite truck | —    | —    | HHDT          |
| Paving - SRPS                | —            | —    | —    | —             |
| Paving - SRPS                | Worker       | 30.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - SRPS                | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Paving - SRPS                | Hauling      | 1.00 | 30.0 | HHDT          |
| Paving - SRPS                | Onsite truck | —    | —    | HHDT          |
| Building Construction - SRPS | —            | —    | —    | —             |
| Building Construction - SRPS | Worker       | 140  | 11.7 | LDA,LDT1,LDT2 |
| Building Construction - SRPS | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Building Construction - SRPS | Hauling      | 1.00 | 30.0 | HHDT          |
| Building Construction - SRPS | Onsite truck | 1.00 | 1.00 | HHDT          |
| Building Construction - LMPS | —            | —    | —    | —             |
| Building Construction - LMPS | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Building Construction - LMPS | Vendor       | 4.00 | 8.40 | HHDT,MHDT     |
| Building Construction - LMPS | Hauling      | 0.00 | 30.0 | HHDT          |
| Building Construction - LMPS | Onsite truck | —    | —    | HHDT          |
| Building Construction - CPS  | —            | —    | —    | —             |
| Building Construction - CPS  | Worker       | 140  | 11.7 | LDA,LDT1,LDT2 |
| Building Construction - CPS  | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Building Construction - CPS  | Hauling      | 1.00 | 30.0 | HHDT          |

|                             |              |      |      |               |
|-----------------------------|--------------|------|------|---------------|
| Building Construction - CPS | Onsite truck | 1.00 | 1.00 | HHDT          |
| Paving - initial pipes      | —            | —    | —    | —             |
| Paving - initial pipes      | Worker       | 20.0 | 11.7 | LDA,LDT1,LDT2 |
| Paving - initial pipes      | Vendor       | 1.00 | 8.40 | HHDT,MHDT     |
| Paving - initial pipes      | Hauling      | 9.00 | 30.0 | HHDT          |
| Paving - initial pipes      | Onsite truck | 3.00 | 1.00 | HHDT          |

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

| Control Strategies Applied                      | PM10 Reduction | PM2.5 Reduction |
|-------------------------------------------------|----------------|-----------------|
| Water unpaved roads twice daily                 | 55%            | 55%             |
| Limit vehicle speeds on unpaved roads to 25 mph | 44%            | 44%             |
| Sweep paved roads once per month                | 9%             | 9%              |

5.5. Architectural Coatings

| Phase Name | Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|------------|------------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------|
|------------|------------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------|

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

| Phase Name                         | Material Imported (Cubic Yards) | Material Exported (Cubic Yards) | Acres Graded (acres) | Material Demolished (sq. ft.) | Acres Paved (acres) |
|------------------------------------|---------------------------------|---------------------------------|----------------------|-------------------------------|---------------------|
| Demolition - CPS                   | 0.00                            | 500                             | 0.00                 | 0.00                          | —                   |
| Demolition - SRPS                  | 0.00                            | 500                             | 0.00                 | 0.00                          | —                   |
| Grading - initial pipes and vaults | 0.00                            | 83,000                          | 8.40                 | 0.00                          | —                   |

|                                    |         |         |      |      |      |
|------------------------------------|---------|---------|------|------|------|
| Grading - initial soil improvement | 43,400  | 52,100  | 0.01 | 0.00 | —    |
| Grading - pipeline abandonment     | 2,800   | 0.00    | 0.00 | 0.00 | —    |
| Grading - subsq pipes and vaults   | 0.00    | 118,000 | 24.0 | 0.00 | —    |
| Paving - subsq pipes               | 108,000 | 0.00    | 0.02 | 0.00 | —    |
| Grading - CPS                      | 0.00    | 4,000   | 0.15 | 0.00 | —    |
| Grading - SRPS                     | 0.00    | 4,000   | 0.29 | 0.00 | —    |
| Paving - initial pipes             | 75,000  | 0.00    | 0.02 | 0.00 | 38.8 |

5.6.2. Construction Earthmoving Control Strategies

| Control Strategies Applied | Frequency (per day) | PM10 Reduction | PM2.5 Reduction |
|----------------------------|---------------------|----------------|-----------------|
| Water Exposed Area         | 3                   | 74%            | 74%             |

5.7. Construction Paving

| Land Use                       | Area Paved (acres) | % Asphalt |
|--------------------------------|--------------------|-----------|
| Other Asphalt Surfaces         | 38.8               | 100%      |
| Refrigerated Warehouse-No Rail | 0.00               | 0%        |

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

| Year | kWh per Year | CO2 | CH4  | N2O     |
|------|--------------|-----|------|---------|
| 2026 | 2,000        | 204 | 0.03 | < 0.005 |
| 2027 | 2,000        | 204 | 0.03 | < 0.005 |
| 2028 | 2,000        | 204 | 0.03 | < 0.005 |
| 2029 | 2,000        | 204 | 0.03 | < 0.005 |
| 2030 | 2,000        | 204 | 0.03 | < 0.005 |

|      |       |     |      |         |
|------|-------|-----|------|---------|
| 2031 | 2,000 | 204 | 0.03 | < 0.005 |
| 2032 | 2,000 | 204 | 0.03 | < 0.005 |
| 2033 | 2,000 | 204 | 0.03 | < 0.005 |
| 2034 | 2,000 | 204 | 0.03 | < 0.005 |
| 2035 | 2,000 | 204 | 0.03 | < 0.005 |
| 2036 | 2,000 | 204 | 0.03 | < 0.005 |
| 2037 | 2,000 | 204 | 0.03 | < 0.005 |
| 2038 | 2,000 | 204 | 0.03 | < 0.005 |
| 2039 | 2,000 | 204 | 0.03 | < 0.005 |
| 2040 | 2,000 | 204 | 0.03 | < 0.005 |

5.9. Operational Mobile Sources

5.9.1. Unmitigated

| Land Use Type       | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year |
|---------------------|---------------|----------------|--------------|------------|-------------|--------------|------------|----------|
| Total all Land Uses | 1.00          | 1.00           | 1.00         | 365        | 10.5        | 10.5         | 10.5       | 3,848    |

5.9.2. Mitigated

| Land Use Type       | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year |
|---------------------|---------------|----------------|--------------|------------|-------------|--------------|------------|----------|
| Total all Land Uses | 1.00          | 1.00           | 1.00         | 365        | 10.5        | 10.5         | 10.5       | 3,848    |

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

| Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|------------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------|
| 0                                        | 0.00                                     | 0.00                                         | 0.00                                         | 0.00                        |

5.10.3. Landscape Equipment

| Season      | Unit   | Value |
|-------------|--------|-------|
| Snow Days   | day/yr | 0.00  |
| Summer Days | day/yr | 0.00  |

5.10.4. Landscape Equipment - Mitigated

| Season      | Unit   | Value |
|-------------|--------|-------|
| Snow Days   | day/yr | 0.00  |
| Summer Days | day/yr | 0.00  |

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use                       | Electricity (kWh/yr) | CO2 | CH4    | N2O    | Natural Gas (kBTU/yr) |
|--------------------------------|----------------------|-----|--------|--------|-----------------------|
| Other Asphalt Surfaces         | 0.00                 | 204 | 0.0330 | 0.0040 | 0.00                  |
| Refrigerated Warehouse-No Rail | 442,978              | 204 | 0.0330 | 0.0040 | 0.00                  |

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use | Electricity (kWh/yr) | CO2 | CH4 | N2O | Natural Gas (kBTU/yr) |
|----------|----------------------|-----|-----|-----|-----------------------|
|----------|----------------------|-----|-----|-----|-----------------------|

|                                |         |     |        |        |      |
|--------------------------------|---------|-----|--------|--------|------|
| Other Asphalt Surfaces         | 0.00    | 204 | 0.0330 | 0.0040 | 0.00 |
| Refrigerated Warehouse-No Rail | 442,978 | 204 | 0.0330 | 0.0040 | 0.00 |

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

| Land Use                       | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|--------------------------------|-------------------------|--------------------------|
| Other Asphalt Surfaces         | 0.00                    | 0.00                     |
| Refrigerated Warehouse-No Rail | 0.00                    | 0.00                     |

5.12.2. Mitigated

| Land Use                       | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|--------------------------------|-------------------------|--------------------------|
| Other Asphalt Surfaces         | 0.00                    | 0.00                     |
| Refrigerated Warehouse-No Rail | 0.00                    | 0.00                     |

5.13. Operational Waste Generation

5.13.1. Unmitigated

| Land Use                       | Waste (ton/year) | Cogeneration (kWh/year) |
|--------------------------------|------------------|-------------------------|
| Other Asphalt Surfaces         | 0.00             | —                       |
| Refrigerated Warehouse-No Rail | 0.00             | —                       |

5.13.2. Mitigated

| Land Use                       | Waste (ton/year) | Cogeneration (kWh/year) |
|--------------------------------|------------------|-------------------------|
| Other Asphalt Surfaces         | 0.00             | —                       |
| Refrigerated Warehouse-No Rail | 0.00             | —                       |



5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

| Land Use Type | Equipment Type | Refrigerant | GWP | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|---------------|----------------|-------------|-----|---------------|----------------------|-------------------|----------------|
|---------------|----------------|-------------|-----|---------------|----------------------|-------------------|----------------|

5.14.2. Mitigated

| Land Use Type | Equipment Type | Refrigerant | GWP | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|---------------|----------------|-------------|-----|---------------|----------------------|-------------------|----------------|
|---------------|----------------|-------------|-----|---------------|----------------------|-------------------|----------------|

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|----------------|-----------|-------------|----------------|---------------|------------|-------------|
| Pumps          | Diesel    | Average     | 6.00           | 1.00          | 1,260      | 0.74        |

5.15.2. Mitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|----------------|-----------|-------------|----------------|---------------|------------|-------------|
| Pumps          | Diesel    | Average     | 6.00           | 1.00          | 1,260      | 0.74        |

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

| Equipment Type      | Fuel Type | Number per Day | Hours per Day | Hours per Year | Horsepower | Load Factor |
|---------------------|-----------|----------------|---------------|----------------|------------|-------------|
| Emergency Generator | Diesel    | 1.00           | 0.03          | 12.0           | 9,999      | 0.73        |

5.16.2. Process Boilers

| Equipment Type | Fuel Type | Number | Boiler Rating (MMBtu/hr) | Daily Heat Input (MMBtu/day) | Annual Heat Input (MMBtu/yr) |
|----------------|-----------|--------|--------------------------|------------------------------|------------------------------|
|----------------|-----------|--------|--------------------------|------------------------------|------------------------------|

5.17. User Defined

| Equipment Type | Fuel Type |
|----------------|-----------|
|----------------|-----------|

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

| Vegetation Land Use Type | Vegetation Soil Type | Initial Acres | Final Acres |
|--------------------------|----------------------|---------------|-------------|
|--------------------------|----------------------|---------------|-------------|

5.18.1.2. Mitigated

| Vegetation Land Use Type | Vegetation Soil Type | Initial Acres | Final Acres |
|--------------------------|----------------------|---------------|-------------|
|--------------------------|----------------------|---------------|-------------|

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

| Biomass Cover Type | Initial Acres | Final Acres |
|--------------------|---------------|-------------|
|--------------------|---------------|-------------|

5.18.1.2. Mitigated

| Biomass Cover Type | Initial Acres | Final Acres |
|--------------------|---------------|-------------|
|--------------------|---------------|-------------|

5.18.2. Sequestration

5.18.2.1. Unmitigated

| Tree Type | Number | Electricity Saved (kWh/year) | Natural Gas Saved (btu/year) |
|-----------|--------|------------------------------|------------------------------|
|-----------|--------|------------------------------|------------------------------|

5.18.2.2. Mitigated

| Tree Type | Number | Electricity Saved (kWh/year) | Natural Gas Saved (btu/year) |
|-----------|--------|------------------------------|------------------------------|
|-----------|--------|------------------------------|------------------------------|

## 6. Climate Risk Detailed Report

### 6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

| Climate Hazard               | Result for Project Location | Unit                                       |
|------------------------------|-----------------------------|--------------------------------------------|
| Temperature and Extreme Heat | 5.77                        | annual days of extreme heat                |
| Extreme Precipitation        | 8.40                        | annual days with precipitation above 20 mm |
| Sea Level Rise               | —                           | meters of inundation depth                 |
| Wildfire                     | 3.64                        | annual hectares burned                     |

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about  $\frac{3}{4}$  an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

### 6.2. Initial Climate Risk Scores

| Climate Hazard               | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|------------------------------|----------------|-------------------|-------------------------|---------------------|
| Temperature and Extreme Heat | N/A            | N/A               | N/A                     | N/A                 |
| Extreme Precipitation        | 3              | 0                 | 0                       | N/A                 |
| Sea Level Rise               | 1              | 0                 | 0                       | N/A                 |
| Wildfire                     | 1              | 0                 | 0                       | N/A                 |
| Flooding                     | N/A            | N/A               | N/A                     | N/A                 |
| Drought                      | N/A            | N/A               | N/A                     | N/A                 |

|                         |     |     |     |     |
|-------------------------|-----|-----|-----|-----|
| Snowpack Reduction      | N/A | N/A | N/A | N/A |
| Air Quality Degradation | 0   | 0   | 0   | N/A |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

| Climate Hazard               | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|------------------------------|----------------|-------------------|-------------------------|---------------------|
| Temperature and Extreme Heat | N/A            | N/A               | N/A                     | N/A                 |
| Extreme Precipitation        | 3              | 1                 | 1                       | 3                   |
| Sea Level Rise               | 1              | 1                 | 1                       | 2                   |
| Wildfire                     | 1              | 1                 | 1                       | 2                   |
| Flooding                     | N/A            | N/A               | N/A                     | N/A                 |
| Drought                      | N/A            | N/A               | N/A                     | N/A                 |
| Snowpack Reduction           | N/A            | N/A               | N/A                     | N/A                 |
| Air Quality Degradation      | 1              | 1                 | 1                       | 2                   |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

| Indicator                       | Result for Project Census Tract |
|---------------------------------|---------------------------------|
| Exposure Indicators             | —                               |
| AQ-Ozone                        | 6.38                            |
| AQ-PM                           | 27.3                            |
| AQ-DPM                          | 53.6                            |
| Drinking Water                  | 15.0                            |
| Lead Risk Housing               | 72.1                            |
| Pesticides                      | 0.00                            |
| Toxic Releases                  | 44.2                            |
| Traffic                         | 66.8                            |
| Effect Indicators               | —                               |
| CleanUp Sites                   | 0.00                            |
| Groundwater                     | 0.00                            |
| Haz Waste Facilities/Generators | 45.7                            |
| Impaired Water Bodies           | 0.00                            |
| Solid Waste                     | 0.00                            |
| Sensitive Population            | —                               |
| Asthma                          | 6.78                            |
| Cardio-vascular                 | 2.68                            |
| Low Birth Weights               | 66.8                            |
| Socioeconomic Factor Indicators | —                               |
| Education                       | 52.9                            |
| Housing                         | 29.7                            |
| Linguistic                      | 82.5                            |
| Poverty                         | 27.9                            |
| Unemployment                    | 13.2                            |

## 7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

| Indicator                                    | Result for Project Census Tract |
|----------------------------------------------|---------------------------------|
| Economic                                     | —                               |
| Above Poverty                                | 62.44065187                     |
| Employed                                     | 28.69241627                     |
| Median HI                                    | 78.78865649                     |
| Education                                    | —                               |
| Bachelor's or higher                         | 71.83369691                     |
| High school enrollment                       | 100                             |
| Preschool enrollment                         | 89.92685744                     |
| Transportation                               | —                               |
| Auto Access                                  | 20.53124599                     |
| Active commuting                             | 94.76453227                     |
| Social                                       | —                               |
| 2-parent households                          | 30.97651739                     |
| Voting                                       | 52.32901322                     |
| Neighborhood                                 | —                               |
| Alcohol availability                         | 14.17939176                     |
| Park access                                  | 81.35506224                     |
| Retail density                               | 80.16168356                     |
| Supermarket access                           | 94.25125112                     |
| Tree canopy                                  | 52.43166945                     |
| Housing                                      | —                               |
| Homeownership                                | 74.92621583                     |
| Housing habitability                         | 60.42602335                     |
| Low-inc homeowner severe housing cost burden | 18.37546516                     |
| Low-inc renter severe housing cost burden    | 66.09778006                     |
| Uncrowded housing                            | 47.8121391                      |
| Health Outcomes                              | —                               |

|                                       |             |
|---------------------------------------|-------------|
| Insured adults                        | 86.94982677 |
| Arthritis                             | 41.4        |
| Asthma ER Admissions                  | 94.3        |
| High Blood Pressure                   | 36.7        |
| Cancer (excluding skin)               | 36.4        |
| Asthma                                | 91.1        |
| Coronary Heart Disease                | 51.0        |
| Chronic Obstructive Pulmonary Disease | 65.3        |
| Diagnosed Diabetes                    | 36.9        |
| Life Expectancy at Birth              | 88.9        |
| Cognitively Disabled                  | 64.4        |
| Physically Disabled                   | 39.7        |
| Heart Attack ER Admissions            | 94.5        |
| Mental Health Not Good                | 82.3        |
| Chronic Kidney Disease                | 55.3        |
| Obesity                               | 98.8        |
| Pedestrian Injuries                   | 80.3        |
| Physical Health Not Good              | 64.0        |
| Stroke                                | 45.2        |
| Health Risk Behaviors                 | —           |
| Binge Drinking                        | 97.0        |
| Current Smoker                        | 73.3        |
| No Leisure Time for Physical Activity | 43.0        |
| Climate Change Exposures              | —           |
| Wildfire Risk                         | 0.0         |
| SLR Inundation Area                   | 0.0         |
| Children                              | 51.6        |
| Elderly                               | 9.2         |

|                                  |      |
|----------------------------------|------|
| English Speaking                 | 15.4 |
| Foreign-born                     | 94.7 |
| Outdoor Workers                  | 98.2 |
| Climate Change Adaptive Capacity | —    |
| Impervious Surface Cover         | 6.7  |
| Traffic Density                  | 55.6 |
| Traffic Access                   | 87.4 |
| Other Indices                    | —    |
| Hardship                         | 52.2 |
| Other Decision Support           | —    |
| 2016 Voting                      | 64.8 |

7.3. Overall Health & Equity Scores

| Metric                                                                              | Result for Project Census Tract |
|-------------------------------------------------------------------------------------|---------------------------------|
| CalEnviroScreen 4.0 Score for Project Location (a)                                  | 16.0                            |
| Healthy Places Index Score for Project Location (b)                                 | 77.0                            |
| Project Located in a Designated Disadvantaged Community (Senate Bill 535)           | No                              |
| Project Located in a Low-Income Community (Assembly Bill 1550)                      | No                              |
| Project Located in a Community Air Protection Program Community (Assembly Bill 617) | No                              |

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.  
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.



## 8. User Changes to Default Data

| Screen                                          | Justification                                                                      |
|-------------------------------------------------|------------------------------------------------------------------------------------|
| Construction: Construction Phases               | Phases and duration are known and have been provided                               |
| Construction: Off-Road Equipment                | Equipment list is known and has been provided                                      |
| Construction: Dust From Material Movement       | Import and export materials and quantities are known for each of the phases        |
| Construction: Demolition                        | No demolition to take place                                                        |
| Construction: Trips and VMT                     | Construction vehicle trips are known - they have been determined and provided      |
| Construction: Electricity                       | Electricity details have been provided                                             |
| Operations: Architectural Coatings              | No new paved areas added - no net change                                           |
| Operations: Landscape Equipment                 | No landscaping or landscaping equipment                                            |
| Operations: Energy Use                          | No natural gas. Electricity kw/yr has been rounded up to the nearest whole number. |
| Operations: Water and Waste Water               | No net change                                                                      |
| Operations: Solid Waste                         | No net change                                                                      |
| Operations: Refrigerants                        | No refrigerants                                                                    |
| Operations: Off-Road Equipment                  | Project contains diesel engine pumps and specifics of the pumps are known          |
| Operations: Emergency Generators and Fire Pumps | Specific exercise of the emergency generator in the LMPS is known.                 |

# **APPENDIX E**

## **LIST OF SENSITIVE SPECIES**

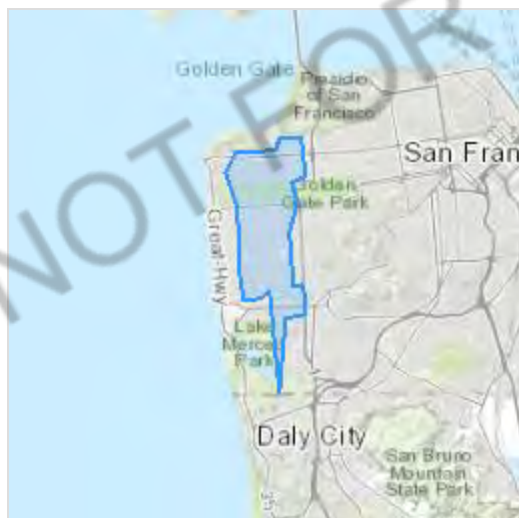
# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

San Francisco and San Mateo counties, California



## Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📅 (916) 414-6713

Federal Building  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

- 
1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

| NAME                                                                                                                                                                                                                                  | STATUS     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Salt Marsh Harvest Mouse <i>Reithrodontomys raviventris</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/613">https://ecos.fws.gov/ecp/species/613</a> | Endangered |

## Birds

| NAME                                                                                                                                                                                                                                                                 | STATUS     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| California Least Tern <i>Sternula antillarum browni</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/8104">https://ecos.fws.gov/ecp/species/8104</a>                                  | Endangered |
| California Ridgway's Rail <i>Rallus obsoletus obsoletus</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/4240">https://ecos.fws.gov/ecp/species/4240</a>                              | Endangered |
| Marbled Murrelet <i>Brachyramphus marmoratus</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br><a href="https://ecos.fws.gov/ecp/species/4467">https://ecos.fws.gov/ecp/species/4467</a>       | Threatened |
| Western Snowy Plover <i>Charadrius nivosus nivosus</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br><a href="https://ecos.fws.gov/ecp/species/8035">https://ecos.fws.gov/ecp/species/8035</a> | Threatened |
| Yellow-billed Cuckoo <i>Coccyzus americanus</i><br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br><a href="https://ecos.fws.gov/ecp/species/3911">https://ecos.fws.gov/ecp/species/3911</a>        | Threatened |

## Reptiles

| NAME                                                                                                                                                                                                                                                 | STATUS              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>Green Sea Turtle</b> <i>Chelonia mydas</i><br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/6199">https://ecos.fws.gov/ecp/species/6199</a>                                              | Threatened          |
| <b>Northwestern Pond Turtle</b> <i>Actinemys marmorata</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/1111">https://ecos.fws.gov/ecp/species/1111</a>               | Proposed Threatened |
| <b>San Francisco Garter Snake</b> <i>Thamnophis sirtalis tetrataenia</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/5956">https://ecos.fws.gov/ecp/species/5956</a> | Endangered          |

## Amphibians

| NAME                                                                                                                                                                                                                                                                                    | STATUS     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>California Red-legged Frog</b> <i>Rana draytonii</i><br>Wherever found<br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br><a href="https://ecos.fws.gov/ecp/species/2891">https://ecos.fws.gov/ecp/species/2891</a> | Threatened |

## Fishes

| NAME                                                                                                                                                                                                                                                                             | STATUS     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Tidewater Goby</b> <i>Eucyclogobius newberryi</i><br>Wherever found<br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br><a href="https://ecos.fws.gov/ecp/species/57">https://ecos.fws.gov/ecp/species/57</a> | Endangered |

## Insects

| NAME                                                                                                                                                                                                                         | STATUS    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Monarch Butterfly</b> <i>Danaus plexippus</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a> | Candidate |

# Flowering Plants

| NAME                                                                                                                                                                                                                                                                                                     | STATUS     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Franciscan Manzanita</b> <i>Arctostaphylos franciscana</i><br>Wherever found<br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br><a href="https://ecos.fws.gov/ecp/species/5350">https://ecos.fws.gov/ecp/species/5350</a>            | Endangered |
| <b>Marin Dwarf-flax</b> <i>Hesperolinon congestum</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/5363">https://ecos.fws.gov/ecp/species/5363</a>                                                                        | Threatened |
| <b>Marsh Sandwort</b> <i>Arenaria paludicola</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/2229">https://ecos.fws.gov/ecp/species/2229</a>                                                                             | Endangered |
| <b>Presidio Clarkia</b> <i>Clarkia franciscana</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/3890">https://ecos.fws.gov/ecp/species/3890</a>                                                                           | Endangered |
| <b>Presidio Manzanita</b> <i>Arctostaphylos hookeri</i> var. <i>ravenii</i><br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/7216">https://ecos.fws.gov/ecp/species/7216</a>                                                  | Endangered |
| <b>Robust Spineflower</b> <i>Chorizanthe robusta</i> var. <i>robusta</i><br>Wherever found<br>There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat.<br><a href="https://ecos.fws.gov/ecp/species/9287">https://ecos.fws.gov/ecp/species/9287</a> | Endangered |
| <b>San Francisco Lessingia</b> <i>Lessingia germanorum</i> (=L.g. var. <i>germanorum</i> )<br>Wherever found<br>No critical habitat has been designated for this species.<br><a href="https://ecos.fws.gov/ecp/species/8174">https://ecos.fws.gov/ecp/species/8174</a>                                   | Endangered |



**Showy Indian Clover** *Trifolium amoenum***Endangered**

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/6459>**White-rayed Pentachaeta** *Pentachaeta bellidiflora***Endangered**

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/7782>

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

## Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds  
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds  
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC  
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

## Bald and Golden Eagle information is not available at this time

### What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds  
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC  
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Migratory bird information is not available at this time

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

### Fish hatcheries

There are no fish hatcheries at this location.

# Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

## Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local



government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION



## Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



**Query Criteria:** Species<span style='color:Red'> IS </span>(Taxidea taxus<span style='color:Red'> OR </span>Falco peregrinus anatum<span style='color:Red'> OR </span>Riparia riparia<span style='color:Red'> OR </span>Layia carnosa<span style='color:Red'> OR </span>Gilia capitata ssp. chamissonis<span style='color:Red'> OR </span>Carex comosa<span style='color:Red'> OR </span>Lichnanthe ursina<span style='color:Red'> OR </span>Laterallus jamaicensis coturniculus<span style='color:Red'> OR </span>Rana draytonii<span style='color:Red'> OR </span>Plagiobothrys chorisianus var. chorisianus<span style='color:Red'> OR </span>Cirsium occidentale var. compactum<span style='color:Red'> OR </span>Hemizonia congesta ssp. congesta<span style='color:Red'> OR </span>Gilia millefoliata<span style='color:Red'> OR </span>Cirsium andrewsii<span style='color:Red'> OR </span>Mylopharodon conocephalus<span style='color:Red'> OR </span>Lasiurus cinereus<span style='color:Red'> OR </span>Horkelia cuneata var. sericea<span style='color:Red'> OR </span>Microseris paludosa<span style='color:Red'> OR </span>Danaus plexippus plexippus pop. 1<span style='color:Red'> OR </span>Cirsium hydrophilum var. vaseyi<span style='color:Red'> OR </span>Erethizon dorsatum<span style='color:Red'> OR </span>Monardella sinuata ssp. nigrescens<span style='color:Red'> OR </span>Actinemys marmorata<span style='color:Red'> OR </span>Bombus caliginosus<span style='color:Red'> OR </span>Adela oplerella<span style='color:Red'> OR </span>Pomatiopsis californica<span style='color:Red'> OR </span>Icaricia icarioides pheres<span style='color:Red'> OR </span>Aphyllon robbinsii<span style='color:Red'> OR </span>Leptosiphon rosaceus<span style='color:Red'> OR </span>Collinsia corymbosa<span style='color:Red'> OR </span>Geothlypis trichas sinuosa<span style='color:Red'> OR </span>Trachusa gummiifera<span style='color:Red'> OR </span>Chorizanthe cuspidata var. cuspidata<span style='color:Red'> OR </span>Silene verecunda ssp. verecunda<span style='color:Red'> OR </span>Thamnophis sirtalis tetrataenia<span style='color:Red'> OR </span>Grindelia hirsutula var. maritima<span style='color:Red'> OR </span>Lessingia germanorum<span style='color:Red'> OR </span>Triphysaria floribunda<span style='color:Red'> OR </span>Plagiobothrys diffusus<span style='color:Red'> OR </span>Cicindela hirticollis grvida<span style='color:Red'> OR </span>Eucyclogobius newberryi<span style='color:Red'> OR </span>Caecidotea tomalensis<span style='color:Red'> OR </span>Heteranthera dubia<span style='color:Red'> OR </span>Bombus occidentalis)

| Species                                                                      | Element Code | Federal Status      | State Status         | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|------------------------------------------------------------------------------|--------------|---------------------|----------------------|-------------|------------|--------------------------------|
| <b>Actinemys marmorata</b><br>northwestern pond turtle                       | ARAAD02031   | Proposed Threatened | None                 | G2          | SNR        | SSC                            |
| <b>Adela oplerella</b><br>Opler's longhorn moth                              | IILEE0G040   | None                | None                 | G2          | S2         |                                |
| <b>Aphyllon robbinsii</b><br>Robbins' broomrape                              | PDORO040Q0   | None                | None                 | G1          | S1         | 1B.1                           |
| <b>Bombus caliginosus</b><br>obscure bumble bee                              | IIHYM24380   | None                | None                 | G2G3        | S1S2       |                                |
| <b>Bombus occidentalis</b><br>western bumble bee                             | IIHYM24252   | None                | Candidate Endangered | G3          | S1         |                                |
| <b>Caecidotea tomalensis</b><br>Tomales isopod                               | ICMAL01220   | None                | None                 | G2          | S2S3       |                                |
| <b>Carex comosa</b><br>bristly sedge                                         | PMCYP032Y0   | None                | None                 | G5          | S2         | 2B.1                           |
| <b>Chorizanthe cuspidata var. cuspidata</b><br>San Francisco Bay spineflower | PDPGN04081   | None                | None                 | G2T1        | S1         | 1B.2                           |
| <b>Cicindela hirticollis grvida</b><br>sandy beach tiger beetle              | IICOL02101   | None                | None                 | G5T2        | S2         |                                |
| <b>Cirsium andrewsii</b><br>Franciscan thistle                               | PDAST2E050   | None                | None                 | G3          | S3         | 1B.2                           |
| <b>Cirsium hydrophilum var. vaseyi</b><br>Mt. Tamalpais thistle              | PDAST2E1G2   | None                | None                 | G2T1        | S1         | 1B.2                           |
| <b>Cirsium occidentale var. compactum</b><br>compact cobwebby thistle        | PDAST2E1Z1   | None                | None                 | G3G4T2      | S2         | 1B.2                           |
| <b>Collinsia corymbosa</b><br>round-headed collinsia                         | PDSCR0H060   | None                | None                 | G1          | S1         | 1B.2                           |





Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



| Species                                                                                          | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|--------------------------------------------------------------------------------------------------|--------------|----------------|--------------|-------------|------------|--------------------------------|
| <b><i>Danaus plexippus plexippus pop. 1</i></b><br>monarch - California overwintering population | IILEPP2012   | Candidate      | None         | G4T1T2Q     | S2         |                                |
| <b><i>Erethizon dorsatum</i></b><br>North American porcupine                                     | AMAFJ01010   | None           | None         | G5          | S3         |                                |
| <b><i>Eucyclogobius newberryi</i></b><br>tidewater goby                                          | AFCQN04010   | Endangered     | None         | G3          | S3         | SSC                            |
| <b><i>Falco peregrinus anatum</i></b><br>American peregrine falcon                               | ABNKD06071   | Delisted       | Delisted     | G4T4        | S3S4       |                                |
| <b><i>Geothlypis trichas sinuosa</i></b><br>saltmarsh common yellowthroat                        | ABPBX1201A   | None           | None         | G5T3        | S3         | SSC                            |
| <b><i>Gilia capitata ssp. chamissonis</i></b><br>blue coast gilia                                | PDPLM040B3   | None           | None         | G5T2        | S2         | 1B.1                           |
| <b><i>Gilia millefoliata</i></b><br>dark-eyed gilia                                              | PDPLM04130   | None           | None         | G2          | S2         | 1B.2                           |
| <b><i>Grindelia hirsutula var. maritima</i></b><br>San Francisco gumplant                        | PDAST470D3   | None           | None         | G5T1Q       | S1         | 3.2                            |
| <b><i>Hemizonia congesta ssp. congesta</i></b><br>congested-headed hayfield tarplant             | PDAST4R0W1   | None           | None         | G5T2        | S2         | 1B.2                           |
| <b><i>Heteranthera dubia</i></b><br>water star-grass                                             | PMPON03010   | None           | None         | G5          | S2         | 2B.2                           |
| <b><i>Horkelia cuneata var. sericea</i></b><br>Kellogg's horkelia                                | PDROS0W043   | None           | None         | G4T1?       | S1?        | 1B.1                           |
| <b><i>Icaricia icarioides pheres</i></b><br>Pheres blue butterfly                                | IILEPG8019   | None           | None         | G5TX        | SX         |                                |
| <b><i>Lasiurus cinereus</i></b><br>hoary bat                                                     | AMACC05032   | None           | None         | G3G4        | S4         |                                |
| <b><i>Laterallus jamaicensis coturniculus</i></b><br>California black rail                       | ABNME03041   | None           | Threatened   | G3T1        | S2         | FP                             |
| <b><i>Layia carnosa</i></b><br>beach layia                                                       | PDAST5N010   | Threatened     | Endangered   | G2          | S2         | 1B.1                           |
| <b><i>Leptosiphon rosaceus</i></b><br>rose leptosiphon                                           | PDPLM09180   | None           | None         | G1          | S1         | 1B.1                           |
| <b><i>Lessingia germanorum</i></b><br>San Francisco lessingia                                    | PDAST5S010   | Endangered     | Endangered   | G1          | S1         | 1B.1                           |
| <b><i>Lichnanthe ursina</i></b><br>bumblebee scarab beetle                                       | IICOL67020   | None           | None         | G2          | S2         |                                |
| <b><i>Microseris paludosa</i></b><br>marsh microseris                                            | PDAST6E0D0   | None           | None         | G2          | S2         | 1B.2                           |
| <b><i>Monardella sinuata ssp. nigrescens</i></b><br>northern curly-leaved monardella             | PDLAM18162   | None           | None         | G3T2        | S2         | 1B.2                           |
| <b><i>Mylopharodon conocephalus</i></b><br>hardhead                                              | AFCJB25010   | None           | None         | G3          | S3         | SSC                            |



Selected Elements by Scientific Name  
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| Species                                                                                  | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|------------------------------------------------------------------------------------------|--------------|----------------|--------------|-------------|------------|--------------------------------|
| <b><i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i></b><br>Choris' popcornflower | PDBOR0V061   | None           | None         | G3T1Q       | S1         | 1B.2                           |
| <b><i>Plagiobothrys diffusus</i></b><br>San Francisco popcornflower                      | PDBOR0V080   | None           | Endangered   | G1Q         | S1         | 1B.1                           |
| <b><i>Pomatiopsis californica</i></b><br>Pacific walker                                  | IMGASJ9020   | None           | None         | G1          | S1         |                                |
| <b><i>Rana draytonii</i></b><br>California red-legged frog                               | AAABH01022   | Threatened     | None         | G2G3        | S2S3       | SSC                            |
| <b><i>Riparia riparia</i></b><br>bank swallow                                            | ABPAU08010   | None           | Threatened   | G5          | S3         |                                |
| <b><i>Silene verecunda</i> ssp. <i>verecunda</i></b><br>San Francisco campion            | PDCAR0U213   | None           | None         | G5T1        | S1         | 1B.2                           |
| <b><i>Taxidea taxus</i></b><br>American badger                                           | AMAJF04010   | None           | None         | G5          | S3         | SSC                            |
| <b><i>Thamnophis sirtalis tetrataenia</i></b><br>San Francisco gartersnake               | ARADB3613B   | Endangered     | Endangered   | G5T2Q       | S2         | FP                             |
| <b><i>Trachusa gummifera</i></b><br>San Francisco Bay Area leaf-cutter bee               | IIHYM80010   | None           | None         | G1          | S1         |                                |
| <b><i>Triphysaria floribunda</i></b><br>San Francisco owl's-clover                       | PDSCR2T010   | None           | None         | G2?         | S2?        | 1B.2                           |

Record Count: 44