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INITIAL STUDY/
MITIGATED NEGATIVE DECLARATION

Suisun Force Main Reliability Project

PREPARED FOR:

FAIRFIELD-SUISUN SEWER DISTRICT
EST 1951

November 2024

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MITIGATED NEGATIVE DECLARATION

Suisun Force Main Reliability Project

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LIST OF ABBREVIATIONS

2022 Scoping Plan	*Final 2022 Scoping Plan for Achieving Carbon Neutrality*
AB	Assembly Bill
BAAQMD	Bay Area Air Quality Management District
Basin Plan	San Francisco Bay Basin
BCDC	San Francisco Bay Conservation and Development Commission
BMP	best management practice
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CARB	California Air Resources board
CA-MUTCD	California Manual of Uniform Control Devices
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CEQA	California Environmental Quality Act
Clean Water Act or CWA	Water Pollution Control Act
CIPP	cured-in-place pipe
CO	carbon monoxide
CO_2	carbon dioxide
Cortese List	California Department of Toxic Substances Hazardous Waste and Substances List
dB	decibels
dBA	A-weighted decibels
diesel PM	particulate matter emitted from diesel construction equipment
DOC	State of California Department of Conservation
DTSC	California Department of Toxic Substances
EPA	US Environmental Protection Agency
EFH	Essential Fish Habitat
EMFAC	Emissions Estimator Model
FAST	Fairfield and Suisun Transit
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FFD	Fairfield Fire Department
FHSZ	Fire Hazard Severity Zone
FMMP	Farmland Mapping and Monitoring Program
FPD	Fairfield Police Department
FPPA	Farmland Protection Policy Act
FSSD	Fairfield-Suisun Sewer District
FSUSD	Fairfield-Suisun Unified School District
FTA	Federal Transit Administration
GHG	greenhouse gas
in/sec	inches per second
IS/Proposed MND	initial study/proposed mitigated negative declaration

lb/day	pounds per day
L_{eq}	energy-equivalent noise level
L_{max}	maximum noise level
LUST	Leaking Underground Storage Tank
MRZ-1	Mineral Resource Zone Category 1
$MTCO_2e$/year	metric tons of carbon dioxide equivalent per year
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NO	nitric oxide
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWIC	Northwest Information Center
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PG&E	Pacific Gas and Electric Company
PM_{10}	respirable particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	fine particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in diameter
PPV	peak particle velocity
ROG	reactive organic gases
RPS	renewables portfolio standard
SB	Senate Bill
SCFD	Suisun City Fire Department
SEL	Sound Exposure Level
SFBAAB	San Francisco Bay Area Air Basin
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SLF	Sacred Lands File
SMAQMD	Sacramento Metropolitan Air Quality Management District
Solano HCP	Solano Multispecies Habitat Conservation Plan
SR	State Route
SRF	Clean Water State Revolving Fund
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
Technical Advisory	*Technical Advisory on Evaluating Transportation Impacts in CEQA*
TUSD	Travis Unified School District
USDA	US Department of Agriculture
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
VMT	vehicle miles traveled
WWTP	wastewater treatment plant

MITIGATED NEGATIVE DECLARATION

PROJECT: SUISUN FORCE MAIN RELIABILITY PROJECT

LEAD AGENCY: FAIRFIELD-SUISUN SEWER DISTRICT

Under CEQA, the lead agency is the public agency with primary responsibility for approval of the project. Fairfield-Suisun Sewer District (FSSD) is the CEQA lead agency because it is responsible for construction and operation of the Suisun Force Main Reliability Project (project).

PROJECT DESCRIPTION SUMMARY

FSSD is proposing to construct two new parallel force mains to operate in lieu of the existing Suisun Force Main to ensure service reliability. The proposed project would include the construction and operation of dual force mains, as well as the appurtenant infrastructure necessary for operation and maintenance of the force mains. The existing force main would be inspected after the new parallel force mains are installed and either abandoned, repurposed, or rehabilitated as a separate project based on the inspection results.

The project alignment would extend between the FSSD's Suisun Pump Station and Central Pump Station, paralleling the existing alignment where possible, but would follow a different alignment compared to the existing force main. The project alignment extends west from the Suisun Pump Station and then north between Suisun Slough and Suisun City Hall. The project alignment then runs north along Civic Center Boulevard. The alignment then extends west, traveling along the northern border of Mike Day Park before turning north and then west bordering Suisun Slough. Once reaching Main Street, the alignment would turn to the north and then travel under State Route 12. The project alignment then turns west, crossing Main Street and the existing Union Pacific Railroad tracks to follow Ohio Street until it intersects with Madison Street, at which point the project alignment reaches Illinois Street and FSSD's Central Pump Station. Four additional alignment options are being considered for segments of the force mains: Civic Center Boulevard to Driftwood Drive, then along the northern border of Suisun Slough (Alignment Option 1); along the western border of Mike Day Memorial Park (Alignment Option 2); Civic Center Boulevard to Lotz Way and west to Main Street (Alignment Option 3); or Webster Street from Ohio Street and then to Illinois Street before connecting to Madison Street (Alignment Option 4). Stormwater improvements would be located along Ohio Street between Jefferson Street and Union Avenue between the pipeline alignment and the Pacific Gas & Electric facility.

FINDINGS

An Initial Study has been prepared to assess the project's potential effects on the environment and the significance of those effects. Based on the Initial Study, it has been determined that the project would not have any significant effects on the environment once mitigation measures are implemented. The conclusion is supported by the following findings:

1. The project would have no impact related to agriculture and forestry resources, mineral resources, and population and housing.
2. The project would have a less-than-significant impact on aesthetics, energy, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, recreation, transportation, utilities and service systems, and wildfire.
3. Mitigation is required to reduce potentially significant impacts related to air quality, biological resources, cultural resources, geology and soils, and tribal cultural resources to less-than-significant levels.

Pursuant to Section 21082.1 of the California Environmental Quality Act, FSSD has independently reviewed and analyzed the Initial Study and Mitigated Negative Declaration for the project and finds that the Initial Study and Mitigated Negative Declaration reflects the independent judgment of FSSD. FSSD further finds that the project mitigation measures shall be implemented as stated in the Mitigated Negative Declaration.

Jordan Damerel, P.E.
General Manager/District Engineer
Fairfield-Suisun Sewer District

1 INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

This initial study/mitigated negative declaration (IS/MND) has been prepared by the Fairfield-Suisun Sewer District (FSSD) to evaluate potential environmental effects resulting from the Suisun Force Main Reliability Project (proposed project). Chapter 2 "Project Description" presents detailed project information.

This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). An initial study is prepared by a lead agency to determine if a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]), and thus to determine the appropriate environmental document. In accordance with State CEQA Guidelines Section 15070, a "public agency shall prepare…a proposed negative declaration or mitigated negative declaration…when: (a) The Initial Study shows that there is no substantial evidence…that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level." In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the project would not have a significant effect on the environment and, therefore, does not require the preparation of an environmental impact report (EIR). By contrast, an EIR is required when the project may have a significant environmental impact that cannot clearly be reduced to a less-than-significant effect by adoption of mitigation or by revisions in the project design.

As described in the environmental checklist (Chapter 3), with mitigation incorporated, implementing the project would not result in any significant environmental impacts. Therefore, an IS/MND is the appropriate document for compliance with the requirements of CEQA. This IS/MND conforms to these requirements and to the content requirements of State CEQA Guidelines Section 15071. Under CEQA, the lead agency is the public agency with primary responsibility for approving the project. FSSD is the CEQA lead agency because it has primary responsibility for approving and carrying out the project.

In addition, the proposed project may be partially funded with a loan from the federal Clean Water State Revolving Fund (SRF) program established by the federal Water Pollution Control Act (Clean Water Act or CWA), as amended in 1987. This program is administered, nationally, by the US Environmental Protection Agency, and in certain instances the administration has been delegated to the states. In California, administration of the SRF program has been delegated to the State Water Resources Control Board (SWRCB). In turn, the SWRCB requires that all projects being considered under the SRF program comply with CEQA and certain federal environmental protection laws. Collectively, the SWRCB refers to these requirements as "CEQA-Plus." Therefore, this IS/MND has been expanded beyond the typical content requirements of an initial study to include additional "CEQA-Plus" information. CEQA does not require consideration of alternatives in MNDs; however, an analysis of alternatives is provided to meet SRF Program requirements. Other CEQA-Plus requirements are fulfilled in the IS analysis and associated appendices (see Chapter 4, "Compliance with Federal Regulations," for a complete list of federal laws addressed in compliance with SRF Program requirements). The SWRCB, as a responsible agency for the project, will consider this CEQA document prior to any SRF loan authorization.

1.2 PURPOSE OF THIS DOCUMENT

CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects. An MND, which requires inclusion of an IS, is a public document used by the decision-making lead agency to determine whether a project may have a significant adverse impact on the environment. If the agency finds that the project as proposed may have a significant adverse impact on the environment but that the impact would be clearly reduced to a less-than-significant level through implementation of specific mitigation measures, an MND shall be prepared.

This IS/MND is a public information document that describes the project, existing environmental setting at the project site, and potential environmental impacts of construction and operation of the project. It is intended to inform the public and decision makers of the project's compliance with CEQA, the State CEQA Guidelines, and CWSRF program requirements.

1.3 PUBLIC REVIEW PROCESS

FSSD will circulate the IS/MND to interested/responsible agencies and to the State Clearinghouse of the Governor's Office of Planning and Research and the Solano County Clerk for a 30-day public review period from October 10, 2024 to November 8, 2024. A copy of the IS/MND and supporting documentation are available for review on FSSD's website: https://www.fairfieldsuisunsewer.ca.gov/sfm/.

Comments should be addressed to:

Karl Ono, P.E., Senior Engineer
Fairfield-Suisun Sewer District
1010 Chadbourne Road
Fairfield, CA 94534

E-mail comments may be addressed to: kono@FairfieldSuisunSewer.ca.gov.

If you have questions regarding the IS/MND, please call Karl Ono at: (707) 428-9129. If you wish to send written comments (including via e-mail), they must be received by 5:00 p.m. on November 8, 2024.

After comments are received from the public and reviewing agencies, FSSD may (1) adopt the MND and approve the project; (2) undertake additional environmental studies; or (3) abandon the project. If the project is approved and funded, the project proponent may proceed with the project.

1.4 SUMMARY OF FINDINGS

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the project.

Based on the issues evaluated in that chapter, it was determined that the project would have either no impact or a less-than-significant impact related to most of the issue areas identified in the Environmental Checklist, included as Appendix G of the State CEQA Guidelines. These include the following issue areas:

- aesthetics,
- agriculture and forest resources,
- energy,
- greenhouse gas emissions,
- hazards and hazardous materials,
- hydrology and water quality,
- land use and planning,
- mineral resources,
- noise,
- population and housing,
- public services,
- recreation,
- transportation and circulation,
- utilities and service systems, and
- wildfire.

Potentially significant impacts were identified for air quality, biological resources, cultural resources, geology and soils, and tribal cultural resources; however, mitigation measures included in the IS/MND (Appendix A) would reduce all impacts to a less-than-significant level.

1.5 DOCUMENT ORGANIZATION

This IS/MND is organized as follows:

- **Chapter 1: Introduction.** This chapter provides an introduction to the environmental review process and SRF process. It describes the purpose and organization of this document as well as presents a summary of findings.
- **Chapter 2: Project Description.** This chapter describes the purpose of and need for the proposed project, identifies project objectives, and provides a detailed description of the project.
- **Chapter 3: Environmental Checklist.** This chapter presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines if project actions would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact. If any impacts were determined to be potentially significant, an EIR would be required. For this project, however, none of the impacts were determined to be significant after implementation of mitigation measures.
- **Chapter 4: Compliance with Federal Regulations.** This chapter provides a discussion of compliance with federal executive orders and regulations required for "CEQA-Plus" compliance.
- **Chapter 5: Alternatives.** This chapter provides an analysis of alternatives to the proposed project including the No Project Alternative.
- **Chapter 6: References.** This chapter lists the references used in preparation of this IS/MND.
- **Chapter 7: List of Preparers.** This chapter identifies the individuals who prepared this IS/MND.

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2 PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

Fairfield-Suisun Sewer District (FSSD) is proposing to construct two new parallel force mains to operate in lieu of the existing Suisun Force Main to ensure service reliability. The existing force main would be inspected after the new parallel force mains are installed and either abandoned, repurposed, or rehabilitated as a separate project based on the inspection results. The project would also include stormwater improvements adjacent to a portion of the pipeline alignment and along the frontage of an existing Pacific Gas and Electric (PG&E) substation.

2.2 PROJECT LOCATION

The existing Suisun Force Main originates at FSSD's Suisun Pump Station and traverses north, then west across the Union Pacific Railroad tracks and State Route (SR) 12, before reaching FSSD's Central Pump Station. The project alignment would also extend between the Suisun Pump Station and the Central Pump Station, paralleling the existing alignment where possible, but would follow a different alignment compared to the existing force main (Figure 2-1). The project alignment extends west from the southern terminus of Civic Center Boulevard, then extend west along the northern border of Mike Day Park and Suisun Slough. Once reaching Main Street, the alignment would turn to the north and then travel under SR 12. The project alignment then turns west, crossing Main Street and the existing Union Pacific Railroad tracks to follow Ohio Street until it intersects with Madison Street, at which point the project alignment turns southward through Illinois Street to FSSD's Central Pump Station property (Figure 2-2). Four additional alignment options are being considered for the segments of the force mains: Civic Center Boulevard to Driftwood Drive, then along the northern border of Suisun Slough (Alignment Option 1); along the western border of Mike Day Memorial Park (Alignment Option 2); Civic Center Boulevard to Lotz Way and west to Main Street (Alignment Option 3); or Webster Street to Illinois Street before connecting to Madison Street (Alignment Option 4) (see Figure 2-2). The stormwater improvements would be located along Ohio Street between Jefferson Street and Union Avenue between the pipeline alignment and the PG&E substation. The entirety of the project alignment is within the cities of Fairfield and Suisun City in Solano County.

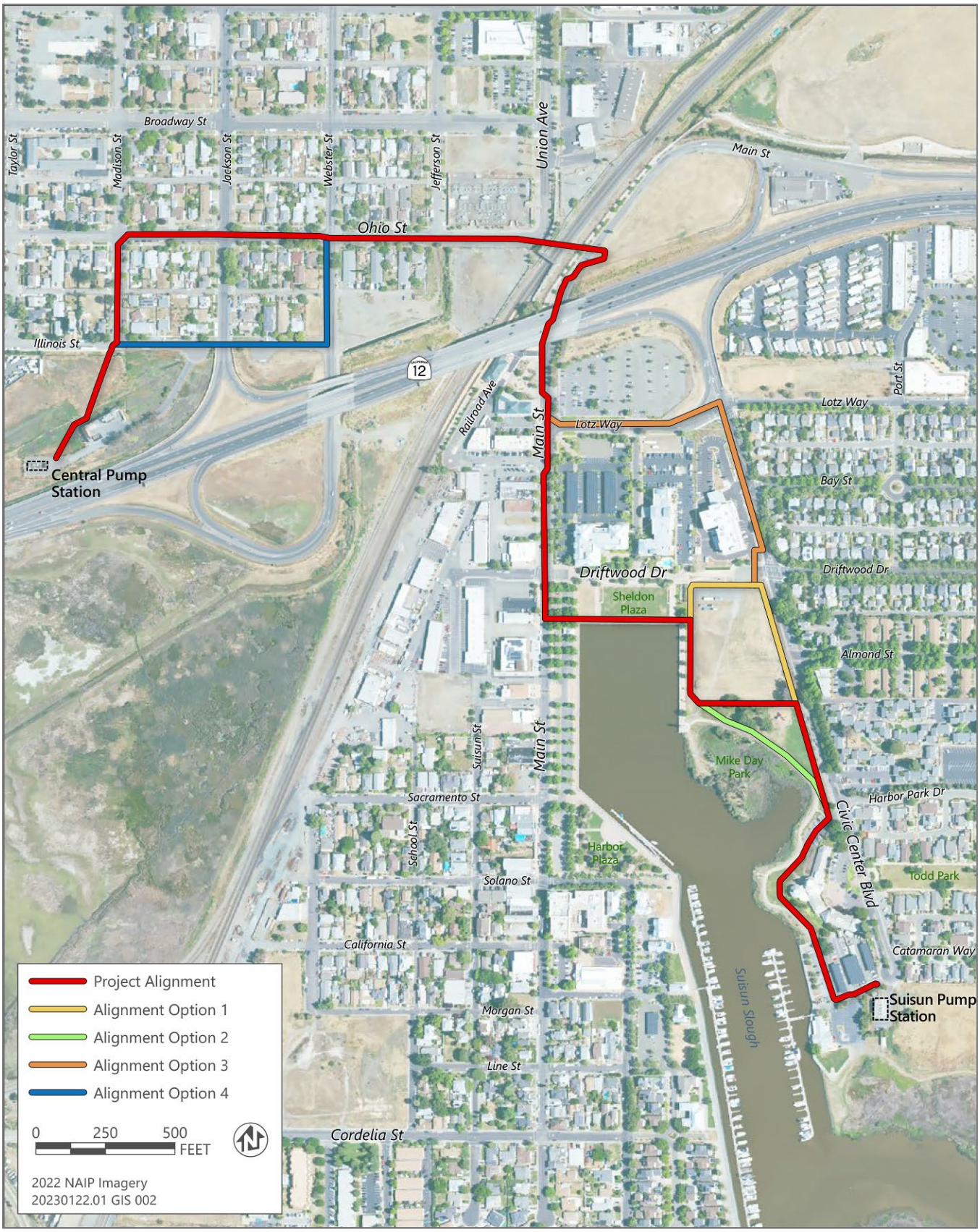
2.3 PROJECT OBJECTIVES

The objectives of the project are to:

- mitigate risks associated with an aging pipeline that has no redundancy, poor access, and minimal ability to be taken out of service for inspection and/or repair;
- contribute to FSSD's goals for ensuring wastewater collection service reliability;
- provide safe and reliable service to existing and proposed development in the cities of Suisun City and Fairfield, as provided by FSSD;
- provide greater operational flexibility;
- maximize the use of available FSSD facilities, property and resources; and
- minimize impacts to nearby sensitive receptors and sensitive natural communities.

Source: Adapted by Ascent in 2024.

Figure 2-1 Project Vicinity



Source: Adapted by Ascent in 2024.

Figure 2-2 Proposed Alignment for New Force Mains

2.4 PROJECT DESCRIPTION

2.4.1 Background

The Suisun Force Main conveys wastewater flow from Suisun City, eastern Fairfield, and Travis Air Force Base, which represents approximately 40 percent of the total flow collected and treated by FSSD. The 36-inch diameter pipeline is approximately 3.5 miles long, extending from downtown Suisun City, into central Fairfield, and along Pennsylvania Avenue and Cordelia Road to FSSD's wastewater treatment plant. The existing force main was constructed in 1974 and consists of steel pipe and concrete cylinder pipe.

In the late 1980's, the Central Pump Station and a parallel 48-inch force main to the wastewater treatment plant were constructed to divert wastewater flow originating in central Fairfield away from Suisun Pump Station and provide a redundant means of conveyance along the last 2 miles of the Suisun Force Main alignment.

The original 36-inch pipeline remains the only means of conveyance between Suisun Pump Station and Central Pump Station. This portion of the alignment fronts Suisun City Hall crosses several critical infrastructure features, including SR 12 and the Union Pacific Railroad, and extends through environmentally sensitive habitat. The pipeline is nearing the end of its expected service life and approaches its hydraulic capacity during storm events.

FSSD is proposing to construct a new approximately 1.5 mile, parallel force main between Suisun Pump Station and Central Pump Station to complete a fully redundant connection between Suisun Pump Station and the wastewater treatment plant, reduce the risks associated with the existing 50-year-old pipeline, and allow for planned outages to inspect, clean, repair, rehabilitate, and/or replace aging portions of the existing pipeline as needed in the future.

2.4.2 Existing Force Main

The existing Suisun Force Main is 16,602 linear feet total, with 16,312 feet of 36-inch steel cylinder concrete pressure pipe, 240 feet of reinforced concrete pressure pipe, and 50 feet of welded steel pipe. There is a pig launcher (i.e., a pressurized container to shoot a cleaning device ("pig") through the pipeline to perform a variety of functions including cleaning) for the existing force main at the Suisun Pump Station, a junction box at Central Pump Station, and a pig retriever structure approximately 1,400 feet upstream of the wastewater treatment plant. There are two 36-inch non-full port plug valves (i.e., valves used for stopping or starting the flow of fluid) along the alignment and seven air release valves.

Existing flow conditions are described in Table 2-1 below.

Table 2-1 Existing Flow Conditions

	Flow (mgd)	Flow (gpm)
Existing minimum flow	2.9	2,400
Existing ADWF	5.7	4,700
Existing PWWF	25.7	21,400

Notes: mgd = million gallons per day, gpm = gallons per minute, ADWF = average dry weather flows, PWWF = peak wet weather flows.

Source: FSSD 2023.

2.4.3 Proposed Project

The proposed project would include dual force mains as well as appurtenant infrastructure necessary for operation and maintenance of the force mains. The project would also include stormwater quality improvements adjacent to a portion of the pipeline alignment and along the frontage of an existing PG&E substation. The new infrastructure is described below.

NEW FORCE MAINS

The proposed project involves construction of dual force mains that would be approximately 32-inch and 36-inch in diameter pipelines, respectively. The project alignment would be approximately 6,600 linear feet (1.25 miles) of high density polyethylene pipeline. Alignment Option 1 would be approximately 6,760 linear feet (1.28 miles) of pipeline, Alignment Option 2 would be 6,470 linear feet (1.23 miles) of pipeline, Alignment Option 3 would be 6,044 linear feet (1.15 miles) of pipeline, and Alignment Option 4 would be 6,624 linear feet (1.25 miles) of pipeline. The pipelines would be installed side by side and connect the Suisun Pump Station and the Central Pump Station. The dual pipelines would allow for redundancy when operating the system. The new force mains would be installed and tested and once operational, the existing force main would be taken out of service for inspection.

AIR RELEASE VALVES

Air release valves are required on pressurized pipelines to manage air and vacuum conditions by releasing small amounts of air that become trapped. Accumulation of air in pipelines reduces the pipeline cross-section, leading to increased head loss, diminished pipeline capacity, and potential performance issues at downstream mechanical equipment. Air/vacuum valves automatically release and admit larger quantities of air to facilitate pipeline filling or draining and can prevent damaging vacuum conditions in the event of pipeline failure and rapid pressure drop. Combination air valves perform the functions of both air release valves and air/vacuum valves and are preferred for operational efficiency.

Sewage type combination air valves would be used to prevent clogging of the air release and vacuum valves since the new force mains would be conveying raw sewage. The exact number and location of combination air valves would be determined during detailed design, but they would generally be installed at the following locations along each pipeline:

- every 1,500 linear feet,
- high points,
- increase in downslope, and
- decrease in upslope.

BLOWOFF ASSEMBLIES

Blowoff assemblies would be installed at low points along the new force mains to allow for draining the pipelines for inspection and maintenance. Low points are expected to be at utility and trenchless crossings. The exact number of blowoff assemblies on each pipeline would be determined during detailed design.

ISOLATION VALVES

Full port plug valves would be installed on the new force mains to provide isolation of each pipeline for operation and maintenance. Isolation valves would be installed at both sides of the trenchless railroad crossing and at the pump station connections for a total of four valves on each pipeline. Ductile iron valves and high density polyethylene pipeline flanged adapters would be used.

All buried valves would be provided with a valve pot, extension stem, 2-inch nut, and position indicator, and would be designed for buried service. Alternatively, valves may be installed in a vault structure to provide access for maintenance. At ground surface, there would be a valve box or access vault provided to access/operate each valve.

ACCESS POINTS

Access points would be provided for future maintenance, cleaning, and inspection. The access points would consist of a tee and blind flange in an access manhole or valve vault. The exact number of access points on each pipeline would be determined during detailed design and where possible combined with other appurtenances. At ground surface, the access point would be a typical 36-inch sewer manhole cover.

STORMWATER IMPROVEMENTS

The project would also include minor stormwater quality improvements along Ohio Street between Jefferson Street and Union Avenue between the pipeline alignment and the PG&E substation. The stormwater improvements would reduce pollutants discharged from the urban environment into storm drains, local creeks, and Suisun Marsh. Polychlorinated biphenyls (PCBs) have been reported in the stormwater runoff in this area, and the stormwater quality improvements would be achieved by installing bioretention areas, or a similar stormwater treatment system, to remove PCBs from the stormwater runoff before it enters the storm drain system. The stormwater quality improvements would reduce pollution to Suisun Marsh, increase groundwater recharge, improve aesthetics and quality of life, and increase compliance with the local Urban Runoff Management Program. Impacts would be reduced by installing the stormwater improvements concurrently with the force main installation along this portion of the alignment.

2.4.4 Construction

Construction of the project alignment or alignment options and stormwater improvements would take approximately 24 months beginning in summer 2026. The new force mains would be installed by open cut trench construction methods with 5 to 7 feet of cover to the top of the pipelines. Approximately 537,000 cubic yards of material from the trench excavation would be hauled off and disposed of. In paved areas, the trench would be vertical and shored for worker safety and have an anticipated width of approximately 8 feet. The force mains would be installed above 18 inches of ¾-inch crushed rock wrapped in filter fabric in the trench for stabilization. The trench would be backfilled with imported material. In unpaved areas, the trench walls may be sloped (1V to 1.5H) and the total top width of disturbance would be approximately 15 feet.

At the crossing of the Union Pacific Railroad tracks, the dual force mains would be installed by trenchless construction methods such as microtunneling. To facilitate trenchless construction, the southeast side of the railroad tracks would have a shaft approximately 20 feet by 35 feet and 50 feet deep. The northwest side of the railroad track would have a shaft approximately 20 feet by 20 feet and 50 feet deep. The work area for trenchless construction equipment would be approximately 15,000 square feet on the southeast side of the tracks and approximately 8,000 square feet on the northwest side of the tracks.

Microtunneling would be performed by using a crane and excavator to construct launching and receiving shafts and remove soil from within the shafts. Once the shafts are constructed, a microtunnel boring machine is placed in the launching shaft by a crane. The microtunneling machine would then drill horizontally from the launching shaft to the receiving shaft and as it progresses a crane would lower pieces of casing pipe behind the microtunnel boring machine. Equipment associated with the microtunneling installation would include the microtunnel boring machine, a small control room at the surface to steer the microtunnel boring machine, a soil separation plant at the surface, and a crane. Dewatering is anticipated because the shafts would be below the groundwater table. Once the microtunnel boring machine has reached the receiving shaft, a crane would remove the microtunnel boring machine from the receiving shaft. A crane would then lower the new sewer force main pipelines in the launching shaft and they would be installed within the casing. Once installed, the shafts would be backfilled with soil using a crane, front end loader, and likely a vibratory soil compactor.

In areas that require dewatering, groundwater would be filtered through a settling tank to remove any sediment and discharged to the sewer system. If contamination is found, groundwater would be treated to remove the contamination and then to discharged to the sewer system.

The number of construction workers on-site would vary; however, approximately 5 to 10 workers are anticipated to be on-site during construction, and there may be several deliveries for materials each day with a few additional delivery trips during construction start-up and the end of construction. Equipment used for construction would include one or more of the following: excavator, backhoe, front loader, crane, dump truck/haul trucks, vibratory compactor, paver, and pickup truck.

Work on City streets would require temporary lane closures and potentially temporary road closures depending on locations and coordination with City requirements. Traffic control plans would be developed and approved by the

City with jurisdiction over the roadway. Flagging, signage, and workers would be provided consistent with city requirements and lane closures would avoid peak travel periods to the extent possible.

Work hours would comply with City of Fairfield and City of Suisun City noise ordinances and would typically be from 7:00 am to 5:00 pm Monday through Friday, and potentially on Saturdays. Limited nighttime work may occur in commercial areas. It is assumed that construction would proceed at an average rate of 30 linear feet per day. Upon completion of construction, all affected areas would be repaved/revegetated and returned to pre-project conditions and vegetation within sensitive natural communities would be restored to the species assemblages present prior to construction.

All work within 100 feet of the Suisun Slough shoreline would require a San Francisco Bay Conservation Delta Commission permit. Work in these areas would also be open cut (trench) construction.

2.4.5 Operations and Maintenance

Before operation, the new pipelines would go through testing and a startup process to determine whether they meet design specifications and are operating properly. Once operational, the existing force main would be maintained on a routine basis per pipe and equipment manufacturer recommendations. Operation and maintenance of the new force mains would be similar to existing conditions. Maintenance activities for the force mains would include inspections, exercising of valves (closing and opening them), and cleaning the pipeline by either flushing the pipeline (temporarily increasing the pump flow rate) or installing a cleaning pig at one end of the pipeline and retrieving it at the other end of the pipeline.

2.5 PROJECT APPROVALS

Permits and other project approvals that may be required by other agencies prior to project construction include the following:

- US Army Corps of Engineers – compliance with Section 404 of the Clean Water Act (CWA) for impacts to waters of the United States.
- State Water Resources Control Board – compliance with the Clean Water State Revolving Fund (SRF) loan program, which uses federal funds to reduce interest costs on funds used for clean water projects. The SRF program requires compliance with federal environmental regulations, including the federal Endangered Species Act (Section 7), the National Historic Preservation Act (Section 106), and the General Conformity Rule for the Clean Air Act. The project would also be required to comply with the Construction General Permit for disturbance of more than 1 acre.
- San Francisco Bay Conservation and Development Commission (BCDC) – compliance with BCDC regulations for disturbance within 100 feet of Suisun Slough.
- San Francisco Bay Regional Water Quality Control Board – compliance with Section 401 of the CWA for impacts to waters of the State.
- California Department of Fish and Wildlife – compliance with Section 1602 of the Fish and Game Code for alteration of a lake or streambed.
- California Department of Transportation (Caltrans) – work within Caltrans right-of-way will require an encroachment permit (additional encroachment permitting may be required for Alignment Options 3 and 4).
- City of Fairfield and City of Suisun City – work on City roadways will require encroachment permits from the City with jurisdiction.
- Union Pacific Railroad – work within railroad right-of-way will require a Right of Entry Permit and License Agreement.

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3 ENVIRONMENTAL CHECKLIST

PROJECT INFORMATION

1. Project Title: Suisun Force Main Reliability Project
2. Lead Agency Name and Address: Fairfield-Suisun Sewer District, 1010 Chadbourne Road, Fairfield, CA 94534
3. Contact Person and Phone Number: Karl Ono, P.E., (707) 428-9129
4. Project Location: Cities of Fairfield and Suisun City in Solano County
5. Project Sponsor's Name and Address: Fairfield-Suisun Sewer District, 1010 Chadbourne Road, Fairfield, CA 94534
6. General Plan Designation: See Section 3.11, "Land Use and Planning" below.
7. Zoning: See Section 3.11, "Land Use and Planning" below.
8. Description of Project: See Chapter 2, "Project Description"
9. Surrounding Land Uses and Setting: Residential and commercial development, City buildings, Mike Day Park, Sheldon Plaza, and Suisun Slough.
10. Other public agencies whose approval is required: See Section 2.5 in Chapter 2, "Project Description"
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.? See Section 3.18, "Tribal Cultural Resources," below.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages. Where noted below with a "Y" for yes, the topic with a potentially significant impact will be addressed in an environmental impact report.

☐ Aesthetics
☐ Agriculture and Forest Resources
☐ Air Quality
☐ Biological Resources
☐ Cultural Resources
☐ Energy
☐ Geology / Soils
☐ Greenhouse Gas Emissions
☐ Hazards / Hazardous Materials
☐ Hydrology / Water Quality
☐ Land Use / Planning
☐ Mineral Resources
☐ Noise
☐ Population / Housing
☐ Public Services
☐ Recreation
☐ Transportation
☐ Tribal Cultural Resources
☐ Utilities / Service Systems
☐ Wildfire
☐ Mandatory Findings of Significance
☐ None
☒ None with Mitigation Incorporated

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

No I find that the proposed project could not have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

Yes 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.

No I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

No 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.

No I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature Date 10/07/2024

Printed Name Jordan Damerel, P.E., General Manager/District Engineer

Agency Fairfield-Suisun Sewer District

3.1 AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Except as provided in Public Resources Code section 21099 (where aesthetic impacts shall not be considered significant for qualifying residential, mixed-use residential, and employment centers), would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) 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?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

3.1.1 Environmental Setting

The project is located within developed areas of the cities of Fairfield and Suisun City. The topography is generally flat throughout the project area. The project alignment (including the four alignment options) originates at the Suisun Pump Station, traverse north, then west across the Union Pacific Railroad tracks and State Route (SR) 12, before reaching the Central Pump Station. The existing Suisun Pump Station and Central Pump Station sites are paved and developed with pump station facilities. Land uses in the project area include residences, vacant land, SR 12, Sheldon Plaza, Mike Day Memorial Park, the Suisun Slough, Suisun City public services department facilities, Pacific Gas and Electric (PG&E) substation, and a commercial shopping center.

The visual character of the project area and the surrounding area is typical of the City of Fairfield suburban neighborhood, which includes residences, roads, overhead utility lines, trees, and landscaping, as well as the City of Suisun City downtown area, which includes public services facilities, residences, commercial shopping areas, roads, utility lines, trees, parks, and landscaping. Public views of the project alignment and alignment options are available from Civic Center Boulevard, Sheldon Plaza, Main Street, Lotz Way, Webster Street, Illinois Street, SR 12, Mike Day Memorial Park, and Ohio Street.

The *City of Suisun City General Plan* designates the Suisun Marsh, the Coastal Range, Cement Hill, the Potrero Hills, and the Vaca Mountains as visual resources (City of Suisun City 2015). The City of Fairfield 2050 General Plan includes Figure 3.1-1, which displays scenic vistas within and surrounding the City of Fairfield (City of Fairfield 2024c). The closest scenic resource to the project area is the Suisun Marsh, located south and west of the project area. As the project alignment and alignment options are at or below ground surface, they are not considered to be within the viewshed of SR 29.

The nearest designated scenic highway is SR 29, located approximately 10 miles west of the proposed project alignment (Caltrans 2019). Neither the project alignment nor the alignment options are within the viewshed of SR 29.

3.1.2 Discussion

a) Have a substantial adverse effect on a scenic vista?

Less-than-significant impact. The project alignment extends west from the Suisun Pump Station, located within the City of Suisun City, and then north between Suisun Slough and Suisun City Hall. The City of Suisun City 2035 General Plan characterizes the Suisun Marsh, Coastal Range, Cement Hill, Potrero Hills, and Vaca Mountains as important visual resources (City of Suisun City 2015). The City of Fairfield 2050 General Plan includes Figure 3.1-1, which displays scenic vistas within and surrounding the City of Fairfield (City of Fairfield 2024c). Limited tree removal may be required; however, once constructed, the new force mains would be entirely underground, and neither the project alignment nor the alignment options would be visible from any of these designated scenic vistas. Portions of the proposed project alignment would run adjacent to the Suisun Slough; however, the pipelines would be underground, and no new development or permanent structures are proposed that could block views. Green stormwater improvements, such as a bioretention area, would be installed along the frontage of the PG&E substation along Ohio Street between Jefferson Street and Union Avenue. This portion of the project would be visible following construction but would be a beneficial change in views from sparse shrubs to natural landscaping. Construction equipment could temporarily disrupt views of the waterfront and Suisun Slough during construction activities; however, visual impacts are anticipated to be short-term and would not affect the same area for an extended period. Upon completion of construction, all affected areas would be repaved/revegetated and returned to pre-project conditions or would include enhanced natural vegetation. Impacts to scenic vistas are anticipated to be temporary and less than significant, and no mitigation is required.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No impact. The project and alignment options originate at the Suisun Pump Station and traverses north, then west across the Union Pacific Railroad tracks and SR 12, before reaching the Central Pump Station. While the project and alignment options cross under SR 12, SR 12 is not designated or eligible to be designated as a state scenic highway. Although limited tree removal may be required, the nearest eligible state scenic highway is SR 29, located approximately 10 miles west of the project area and the project would not be visible from SR 29 (Caltrans 2019). No impacts are anticipated, and no mitigation is required.

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?

Less-than-significant impact. As described above, a portion of the project and alignment options would be adjacent to the Suisun Slough and would involve construction equipment that could temporarily degrade the scenic quality of views along the waterfront. However, construction methods would be consistent with all zoning requirements of the City of Fairfield and Suisun City Waterfront District Specific Plan. Additionally, construction activities would be short-term and minor, with the completion of construction resulting in the affected areas to be repaved/revegetated and returned to pre-project conditions or would include enhanced natural vegetation. Thus, potential impacts associated with conflict of applicable zoning and regulations governing scenic quality would be less than significant. No mitigation is required.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less-than-significant impact. The proposed project would construct two new parallel force mains, as well as appurtenant infrastructure necessary for operation and maintenance of the force mains. The project does not propose any permanent lighting installations. Additionally, construction activities would primarily occur during the daytime. Limited nighttime work may occur. However, if needed, this work would be limited to commercial areas and any temporary lighting would be consistent with existing security and street lighting in the area and would not introduce a new source of substantial lighting. Thus, this impact would be less than significant, and no mitigation is required.

3.2 AGRICULTURE AND FOREST RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agriculture and Forest Resources.				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

3.2.1 Environmental Setting

Farmlands are mapped by the State of California Department of Conservation (DOC) under the Farmland Mapping and Monitoring Program (FMMP). Under the FMMP, land is delineated into the following eight categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban or Built-Up Land, Other Land, and Water. The project area is classified as Grazing Land and Urban and Built-Up Land by the DOC and therefore is not designated as Important Farmland (DOC 2024a). The project area consists of roadways and a

maintained grass area within Mike Day Memorial Park. The project area is surrounded by residences, commercial development, SR 12, railroad tracks, pump stations, and Suisun Slough. There is no farmland in the project vicinity.

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of preserving agriculture and restricting unnecessary conversion to urban uses. Under the contract, landowners received reduced property tax assessments based on the property's value for farming and open spaces as opposed to full market value. Based on Solano County's General Plan, lands in the project area are not under a Williamson Act contract (County of Solano 2008).

In addition, there are no timberlands or forest land in the project area, and the area is not zoned for forest land or forestry resources.

3.2.2 Discussion

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No impact. The proposed project would include two new parallel force mains, originating at the Suisun Pump Station and traversing north, then west, reaching the Central Pump Station. According to the DOC Farmland and Mapping Monitoring Program's California Important Farmland Finder, the project alignment is located on land classified as Grazing Land and Urban and Built-Up Land (DOC 2024a). Neither the project alignment nor the alignment options would be located on or encroach upon Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. No existing or planned farmland operations occur within the project area. Thus, there would be no impacts and no mitigation is required.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

No impact. The project and alignment options are not located on land designated or zoned for agricultural use. The land use designation/zoning for the project area is Commercial Service and Residential Medium-Downtown within the boundaries of the City of Fairfield, and Residential Medium Density, Public Facilities, Commercial-Office-Residential, Downtown Mixed Use, and Main Street Mixed Use within Suisun City's Waterfront Specific Plan, (City of Fairfield 2023, City of Suisun City 2016). Adjacent land is characterized by residential, industrial, mixed-use, and public facilities uses. The project and alignment options do not cross agricultural lands subject to a Williamson Act contract. Therefore, the project would not conflict with zoning for agricultural use or a Williamson Act contract. No impacts are anticipated, and no mitigation is required.

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))?

No impact. As previously discussed, the land use designation/zoning for the project area is Commercial Service and Residential Medium-Downtown within the City of Fairfield and Residential Medium Density, Public Facilities, Commercial-Office-Residential, Downtown Mixed Use, and Main Street Mixed Use within the boundaries of the City of Suisun City. Adjacent land is characterized by residential, industrial, mixed-use, and public facilities uses. The project and alignment options are located within the cities of Fairfield and Suisun City and are not located within or adjacent to land designated for forest land, timberland, or timberland zoned Timberland Production. No impacts are anticipated, and no mitigation is required.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No impact. As previously discussed, the project and alignment options are not located on lands that contain forest land or forest resources. Implementation of the proposed project would not result in the loss of forest land or conversion of forest land to non-forest uses. Thus, no impacts are anticipated, and no mitigation is required.

e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No impact. As previously discussed, there are no lands within the project area that are designated as agricultural or farmland. Additionally, the project is not located on lands designated as forest land. The project would construct approximately 1.5 miles of parallel force mains between Suisun Pump Station and Central Pump Station. No existing or planned farming operations occur within or adjacent to the project or alignment options. Therefore, there would be no impact, and no mitigation is required.

3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make the following determinations. Are significance criteria established by the applicable air district available to rely on for significance determinations? Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Environmental Setting

The US Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for criteria air pollutants that are known to be harmful to human health and the environment: carbon monoxide (CO), lead, nitrogen dioxide, ozone, particulate matter (which is categorized into respirable particulate matter with an aerodynamic diameter less than or equal to 10 microns [PM_{10}] and fine particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in diameter [$PM_{2.5}$]), nitrogen dioxide, and sulfur dioxide. The State of California has established the California Ambient Air Quality Standards (CAAQS) for these six pollutants, as well as for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. NAAQS and CAAQS are scientifically substantiated, numerical concentrations of criteria air pollutants established to protect the public from adverse health impacts caused by exposure to air pollution. A brief description of the criteria air pollutants and their effects on health is provided in Table 3.3-1. Solano County's attainment status for the CAAQS and the NAAQS are shown in Table 3.3-2.

The project area is in the cities of Fairfield and Suisun City, which are within the San Francisco Bay Area Air Basin (SFBAAB). SFBAAB is bounded on the north by the North Coast Air Basin and Lake County Basin, on the south by the North Central Coast Air Basin, and on the east by the Sacramento Valley Air Basin and San Joaquin Valley Air Basin. For state air quality planning purposes, the SFBAAB is classified as a serious nonattainment area with respect to the 1-hour ozone standard. Solano County, and the rest of the SFBAAB, is designated as nonattainment with respect to the CAAQS and NAAQS for ozone (CARB 2022). Ozone is a secondary pollutant resulting from the reaction of reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. The county is designated as nonattainment for the CAAQS for PM_{10} and unclassified for the NAAQS for PM_{10}, and the county is designated as nonattainment for the CAAQS and NAAQS for $PM_{2.5}$ (CARB 2022).

Bay Area Air Quality Management District (BAAQMD) attains and maintains air quality conditions in the SFBAAB, including Solano County, through a comprehensive program of planning, regulation, enforcement, technical

innovation, and promotion of the understanding of air quality issues. The clean air strategy of BAAQMD includes preparing plans and programs to attain the NAAQS and CAAQS, adopting and enforcing rules and regulations, and issuing permits for stationary sources. BAAQMD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the CAA and California Clean Air Act.

Table 3.3-1 Criteria Air Pollutants

Pollutant	Sources	Effects
Ground-level ozone	Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG), also sometimes referred to as volatile organic compounds by some regulating agencies, and nitrogen oxides (NO_X). The main sources of ROG and NO_X, often referred to as ozone precursors, are products of combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels.	Short-term exposure to ground-level ozone can cause a variety of respiratory health effects, including inflammation of the lining of the lungs, reduced lung function, and respiratory symptoms such as cough, wheezing, chest pain, burning in the chest, and shortness of breath. Additionally, it can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.
Carbon monoxide (CO)	Gasoline-fueled vehicles and other on-road and non-road mobile sources are the primary sources of CO in the United States. CO is usually formed as the result of the incomplete combustion of fuels. The highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration.	Exposure to high concentrations of CO reduces the blood's oxygen-carrying capacity, thereby decreasing the supply of oxygen to tissues and organs such as the heart. It 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.
Particulate matter (PM)	Particulate matter (PM) is a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles (liquid droplets or solids) over a wide range of sizes. Particles originate from a variety of man-made stationary and mobile sources, as well as from natural sources such as forest fires. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect.	Scientific studies have suggested links between fine particulate matter and numerous health problems, including asthma, bronchitis, and acute and chronic respiratory symptoms, such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air.
Nitrogen dioxide (NO_2)	Nitric oxide (NO) and NO_2 are emitted by cars, trucks, buses, power plants, and non-road engines and equipment. Emitted NO is rapidly oxidized into NO_2 in the atmosphere. NO_2 is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2.	Aside from contributing to ozone formation, NO_2 exposure has been associated with a variety of health effects, including respiratory symptoms, especially among asthmatic children, and respiratory-related emergency department visits and hospital admissions.
Sulfur dioxide (SO_2)	SO_2 is a combustion product of sulfur or sulfur-containing fuels, such as coal and diesel. Fossil fuel combustion by electrical utilities and industry is the primary source of sulfur dioxide in the United States.	SO_2 is also a precursor to the formation of particulate matter, atmospheric sulfate, and atmospheric sulfuric acid formation that could precipitate downwind as acid rain. Short-term exposures of asthmatic individuals to elevated levels of sulfur dioxide while exercising at a moderate level may result in breathing difficulties, accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Studies also provide consistent evidence of an association between short-term sulfur dioxide exposures and increased respiratory symptoms in children.

Pollutant	Sources	Effects
Lead	Historically, the major source of lead emissions to the air was the combustion of leaded gasoline in motor vehicles (such as cars and trucks). Following the elimination of leaded gasoline in the United States by the mid-1990s, the remaining sources of lead air emissions have been industrial sources, including lead smelting and battery recycling operations, and piston-engine small aircraft that use leaded aviation gasoline	Lead accumulates in bones, blood, and soft tissues. Exposure to lead can affect the development of the central nervous system in young children, resulting in neurodevelopmental effects such as lowered IQ and behavioral problems.

Notes: CO = carbon monoxide; NO_2 = nitrogen dioxide; NO_x = nitrogen oxides; ROG = reactive organic gases; SO_2 = sulfur dioxide.

Source: EPA 2019.

Table 3.3-2 Attainment Status Designations for Solano County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone	Nonattainment (1-hour)[1]	(No State Standard for 1-hour)
	Nonattainment (8-hour)[3] Classification=Marginal	Nonattainment (8-hour) Classification=Marginal
	Nonattainment (8-hour)[4] Classification=Marginal	
Respirable particulate matter (PM_{10})	Unclassified	Nonattainment (24-hour)
		Nonattainment (Annual)
Fine particulate matter ($PM_{2.5}$)	Nonattainment (24-hour)	(No State Standard for 24-Hour)
	Attainment (Annual)	Attainment (Annual)
Carbon monoxide (CO)	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Unclassified/Attainment (1-hour)	Attainment (1-hour)
	Unclassified/Attainment (Annual)	Attainment (Annual)
Sulfur dioxide (SO_2)[5]	Attainment (1-Hour)	Attainment (1-hour)
		Attainment (24-hour)
Lead (Particulate)	Attainment (3-month rolling avg.)	Attainment (30-day average)
Hydrogen Sulfide	No Federal Standard	Unclassified (1-hour)
Sulfates		Attainment (24-hour)
Visibly Reducing Particles		Unclassified (8-hour)
Vinyl Chloride		Unclassified (24-hour)

Notes:

[1] EPA revoked this standard (1979–1-hour Ozone) on June 15, 2005, but some associated requirements still apply.

[2] Per Health and Safety Code (HSC) Section 40921.5(c), the classification is based on 1989 – 1991 data and therefore does not change.

[3] 2008 Standard.

[4] 2015 Standard.

[5] 2010 Standard.

Source: EPA 2023.

BAAQMD published the 2022 CEQA Guidelines in April 2022 and provides guidance to lead agencies preparing air quality impact analyses in CEQA documents (BAAQMD 2022). The purpose of the 2022 CEQA Guidelines is to assist lead agencies in evaluating air quality and climate impacts from proposed land use projects and plans in the SFBAAB, including the portion of Solano County that includes Fairfield and Suisun City. The 2022 CEQA Guidelines include nonbinding recommendations for how a lead agency can evaluate, measure, and mitigate air quality and climate impacts generated from land use construction and operational activities. Chapter 3 of the 2022 CEQA Guidelines also includes BAAQMD-recommended thresholds of significance for evaluating air quality impacts of projects in the SFBAAB. For the purposes of this analysis, the following thresholds of significance, which are based on BAAQMD-

recommended thresholds, are used to determine whether project-generated emissions would result in impacts on air quality that result in adverse effects on human health. These significance thresholds are also consistent with the checklist questions about air quality in Appendix G of the CEQA Guidelines.

Air quality impacts would be significant if the project would:

- result in construction-generated emissions of ROG exceeding 54 pounds per day (lb/day), NO_X exceeding 54 lb/day, PM_{10} exhaust exceeding 82 lb/day, or $PM_{2.5}$ exhaust exceeding 54 lb/day;
- result in operational emissions of ROG exceeding 54 lb/day or 10 tons/year, NO_X exceeding 54 lb/day or 10 tons/year, PM_{10} exceeding 82 lb/day or 15 tons/year, or $PM_{2.5}$ exceeding 54 lb/day or 10 tons/year;
- emit levels of CO that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 parts per million (ppm) or the 8-hour CAAQS of 9 ppm during operations;
- expose any off-site sensitive receptor to a substantial incremental increase in TAC emissions greater than 10 in one million for carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic hazard index of 1.0 or greater and/or increase $PM_{2.5}$ greater than 0.3 micrograms per cubic meter (µg/m3) annual average; or
- create objectional odors affecting a substantial number of people.

3.3.2 Discussion

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less-than-significant impact. The project would involve the construction of two new force mains and the installation of appurtenant structures and stormwater improvements. Because the project would construct newer, more reliable pipelines and would not involve any land use development or result in an increase in employees, operational emissions from the project would be similar, if not less than, existing conditions. Moreover, the project would not introduce any additional residential or employment growth outside of the assumptions made in the 2017 Clean Air Plan. Therefore, because the project would not introduce new operational emissions above baseline conditions, the project's operational emissions would be less than BAAQMD-recommended thresholds and would not contribute to exceedances of the NAAQS or CAAQS or conflict with air quality planning efforts in the region.

The total duration for project construction would be approximately 24 months. Construction activities related to the new force mains and stormwater improvements would occur consecutively. Project construction would result in temporary emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with off-road equipment, haul trucks delivering equipment and materials, and worker commute trips. Fugitive dust PM_{10} and $PM_{2.5}$ emissions would be associated primarily with site preparation and earthwork and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, and unpaved vehicle miles traveled. Exhaust from off-road equipment, haul trucks, and construction worker vehicles would also contain PM_{10} and $PM_{2.5}$. Emissions of ozone precursors, ROG and NO_X, would primarily be associated with construction equipment and on-road mobile exhaust. Construction activities associated with the project would require the use of equipment such as an excavator, backhoe, front-end loader, crane, dump truck/haul trucks, vibratory compactor, paver, and haul trucks.

Emissions associated with the construction of the new force mains and stormwater improvements were estimated using project-specific information (e.g., construction schedule, equipment lists, excavation quantities) and emission factors from the California Emissions Estimator Model (CalEEMod) Version 2022.1 Appendix G for off-road construction equipment exhaust emissions. Mobile source emissions, including worker commute, vendor deliveries, and truck hauling, were estimated using emission factors from CARB's Emissions Estimator Model (EMFAC) 2021 outputs for the project area (i.e., San Francisco Bay Area). Total emissions were divided by the number of anticipated workdays to obtain average daily emissions, which were compared to BAAQMD's average daily mass emission thresholds. In addition, annual emissions were also estimated for comparison to applicable Federal de minimis levels (see Chapter 4). BAAQMD's basic dust control measures were incorporated into the emission modeling. Detailed model inputs, assumptions, and calculations are included in Appendix B. Table 3.3-3 summarizes the modeled average daily emissions from construction activities. For detailed assumptions and modeling inputs, refer to Appendix B.

Table 3.3-3 Summary of Criteria Air Pollutants and Precursors Emitted during Project Construction

Emission Source	Average Daily Emissions (lbs/day)			
	ROG	NOx	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)
Year 1				
Heavy-Duty Equipment	3	24	1	1
Mobile Sources (worker commute, haul trucks)	<1	2	<1	<1
Total	**3**	**27**	**1**	**1**
Year 2				
Heavy-Duty Equipment	3	22	1	1
Mobile Sources (worker commute, haul trucks)	<1	2	<1	<1
Total	3	24	1	1
BAAQMD Thresholds of Significance	**54**	**54**	**82**	**54**
Exceeds?	**No**	**No**	**No**	**No**
	Annual Mass Emissions (TPY)			
Year 1	<1	2	2[1]	<1[1]
Year 2	<1	2	2[1]	<1[1]
De Minimis Levels	100	100	NA	100
Exceed?	**No**	**No**	**NA**	**No**

Notes: lb/day = pounds per day; TPY = tons per year; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; BAAQMD = Bay Area Air Quality Management District; NA = not applicable; Numbers presented may not sum to the totals presented due to rounding.

[1] Includes both exhaust and fugitive PM_{10} and $PM_{2.5}$ emissions.

Source: Modeled by Ascent in 2024.

As shown in Table 3.3-3, project construction would not result in emissions of ROG, NO_X, PM_{10} exhaust, or $PM_{2.5}$ exhaust that would exceed BAAQMD's mass emission thresholds or general conformity applicability de minimis limits. However, the project does not incorporate BAAQMD's Basic Best Management Practices for Construction-Related Fugitive Dust Emissions as a project design feature, a component of BAAQMD's CEQA thresholds of significance. Therefore, this impact would be significant.

Mitigation Measure 3.3-1: Implement the Bay Area Air Quality Management District's Basic Best Management Practices for Construction-Related Fugitive Dust Emissions

Prior to the issuance of construction documents, FSSD will ensure that BAAQMD's basic construction mitigation measures from Table 5-2 of the BAAQMD 2022 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents. These basic construction mitigation measures include the following:

1) All exposed surfaces (e.g., unpaved parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4) All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
5) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6) All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

7) All trucks and equipment, including their tires, shall be washed off prior to leaving any unpaved areas.

8) Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

9) A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Significance after Mitigation

Implementing Mitigation Measure 3.3-1 would reduce significant impacts related to fugitive dust emissions to a less-than-significant level because it would incorporate BAAQMD's Basic Best Management Practices for Construction-Related Fugitive Dust Emissions, which would minimize fugitive dust emissions from construction.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

See discussion above under Impact 3.3.2a.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less-than-significant impact. Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children and the elderly. Residences, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and the potential for these individuals to experience increased and prolonged exposure to pollutants. Sensitive receptors in the project vicinity include single-family residences, schools, and parks in the vicinity of the project and alignment options. The nearest sensitive receptor to the project alignment would be residences along Illinois Street, Madison Street, Jackson Street, Webster Street, Jefferson Street, Ohio Street, Bay Street, Almond Street, Harbor Park Drive, Catamaran Way, Civic Center Boulevard, Lotz Way, and Driftwood Drive. The nearest sensitive receptors to Alignment Option 1 would be Driftwood Drive and Almond Street; the nearest receptors to Alignment Option 2 would be along Almond Street and Harbor Park Drive, Alignment 3 would be along Lotz Way, and Alignment 4 would be along Webster and Illinois Streets. Alignment Option 2 near Mike Day Memorial Park would be adjacent to the fewest number of residences, while Alignment Options 3 and 4 would be in proximity to the greatest number of residences.

The project would operate similarly to the existing Suisun Force Main and would not introduce any new operational sources of TACs, such as stationary sources. Moreover, the project would not increase operational vehicle trips and, consequently, would not result in a carbon monoxide hotspot above baseline conditions.

Project construction would result in new emissions of criteria air pollutants and precursors, as described above, and TACs. Particulate matter emitted from diesel construction equipment (diesel PM) would be the primary TAC of concern associated with the project. As shown above in Table 3.3-3, construction-related activities would emit up to 1 lb/day of PM_{10} exhaust (considered a surrogate for diesel PM). The dose to which receptors are exposed is the primary factor in determining health risk (i.e., potential exposure to TAC emission levels exceeding applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 30- or 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2015). Additionally, construction would be temporary and intermittent over a limited period of 24 months, a duration substantially shorter than the exposure period used for typical health risk calculations (i.e., 30 or 70 years). In addition, not all diesel PM-emitting construction activity

would occur in the same location near the same sensitive receptors as construction is expected to proceed along the project or alignment options at an average rate of 30 linear feet per day. For these reasons, the cancer risk associated with diesel PM generated by project construction would be expected to be less than 10 in 1 million at nearby sensitive receptors. Furthermore, the project would not increase other noncarcinogenic TACs that could expose nearby receptors to an acute or chronic Hazard Index greater than 1.0.

Table 3.3-3 shows that project construction would not result in ROG, NO_X, PM_{10}, or $PM_{2.5}$ emissions that exceed BAAQMD-recommended mass emission thresholds or de minimis levels. Construction-related emissions would not expose sensitive receptors to concentrations of criteria air pollutants that exceed the NAAQS or CAAQS; or to a dose of TACs that would result in an incremental increase in cancer risk greater than 10 in 1 million or a Hazard Index greater than 1.0. Therefore, the project's construction would not expose receptors to unhealthy concentrations of TACs and would not individually lead to an adverse health outcome. This impact would be less than significant, and no mitigation is required.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less-than-significant impact. Minor odors from using heavy equipment during construction would be temporary and intermittent and dissipate rapidly from the source with increases in distance. As discussed above, the nearest sensitive receptors to Alignment Option 1 would be residences along Driftwood Drive and Almond Street; the nearest receptors to Alignment Option 2 would be along Almond Street and Harbor Park Drive; the nearest receptors to Alignment Option 3 would be along Lotz Way, and the nearest receptors to Alignment Option 4 would be along Webster and Illinois Streets. Although some construction activities would occur within proximity to single-family residences, construction activity would typically occur between 7:00 am and 5:00 pm Monday through Friday, would move linearly during construction of the project alignment or alignment options, and would not occur in one area for the entire duration of construction (i.e., 24 months). Therefore, project construction is not anticipated to result in an odor-related impact.

Project operation and maintenance activities would be limited and would not generate any new odors. Therefore, project construction or operation would not result in the exposure of a substantial number of people to objectionable odors, and this impact would be less than significant. No mitigation is required.

3.4 BIOLOGICAL RESOURCES

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

3.4.1 Environmental Setting

Much of the project area occurs within developed urban areas, annual grassland, and previously disturbed land within both the cities of Fairfield and Suisun City, in Solano County. The project portion that is within the City of Fairfield occurs within the south end of the Heart of Fairfield Area. The portion of the project within the City of Suisun City occurs within the Downtown Waterfront Area. The project portion that is within the City of Fairfield occurs within the south end of the Heart of Fairfield Area. The project is north of Suisun Marsh, the largest contiguous estuarine marsh remaining on the west coast of the United States.

The land cover types were field verified during an aquatic resources delineation survey conducted by Ascent on June 11, 2024. The survey area included a 100-foot area centered on the proposed alignment and alignment options. Although no work is proposed within the open water of the Suisun City Marina, that landcover type and others are included below.

Land Cover Types observed within the survey area include developed, annual grassland, riparian scrub, freshwater emergent wetland, seasonal wetland, drainage ditch, and open water.

Table 3.4-1 and Table 3.4-2 report the wildlife and plant species identified in through literature review and database searches, including the California Natural Diversity Database and California Native Plant Society Rare Plant Inventory, as well as those covered under the Solano Multispecies Habitat Conservation Plan (Solano HCP) with a likelihood of occurring in the project area.

Table 3.4-1 Special-Status Wildlife Species Known to Occur in the Vicinity of the Project Area and Potential for Occurrence on the Project Area

Species	Listing Status[1] Federal	Listing Status[1] State	Solano HCP Covered Species	Habitat	Potential for Occurrence
Reptiles					
Northwestern pond turtle *Actinemys marmorata*	PT	SSC	SHCP	Ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to approximately 0.3 mile (0.5 km) from water for egg-laying.	May occur. Suisun Slough provides aquatic habitat for northwestern pond turtle, the seasonal wetlands in the north portion of the project area do not provide suitable habitat for this species.
Birds					
Grasshopper sparrow *Ammodramus savannarum*	—	SSC	SHCP	Valley and foothill grassland. Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	May occur. Grassland within the project area may provide nesting habitat for this species, although mowing likely precludes its presence.
Northern harrier *Circus hudsonius*	—	SSC	SHCP	Coastal salt and freshwater marsh. Nest and forage in grasslands Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	May occur. Annual grassland and marsh habitat in the project area may provide nesting habitat for northern harrier.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	—	SSC	SHCP	Marsh and swamp. Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	May occur. Marsh habitat within Suisun Slough provides habitat for this species.
Suisun song sparrow *Melospiza melodia maxillaris*	—	SSC	SHCP	Marsh and swamp, wetlands. Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and pickleweed (Salicornia spp.); also known to frequent tangles bordering sloughs.	May occur. Marsh and wetland habitat may provide habitat for this species. There are known nearby occurrences of this species.
Swainson's hawk *Buteo swainsoni*	—	ST	SHCP	Great Basin grassland, riparian forest, riparian woodland, valley and foothill grassland. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	May occur. Trees in the vicinity of the project area may provide nesting habitat for this species.
White-tailed kite *Elanus leucurus*	—	FP	—	Cismontane woodland, marsh and swamp, riparian woodland, valley and foothill grassland, and wetlands. Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	May occur. Trees in the vicinity of the project area may provide nesting habitat for this species.

Species	Listing Status[1] Federal	Listing Status[1] State	Solano HCP Covered Species	Habitat	Potential for Occurrence
Fish					
Green sturgeon – southern DPS *Acipenser medirostris* pop. 1	FT	SSC	SHCP	Southern DPS green sturgeon are found in the Sacramento and San Joaquin rivers and Delta. These are the most marine species of sturgeon. Spawns in the upper mainstem of the Sacramento River. Use of the San Joaquin River is unclear, but adult sturgeon was recently found in a major tributary, the Stanislaus River, indicating at least some use of that system. This species migrates from seawater into the freshwater reaches in March-June. Spawns at temperatures between 8-14 degrees Celsius. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock. Some adults exit the rivers rapidly, but some over-summer in deep pools and leave with the onset of winter rains.	May occur. Species is known to occur in Suisun Bay and may venture into Suisun Slough.
Delta smelt *Hypomesus transpacificus*	FT	SE	SHCP	Estuary. Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities greater than 10 ppt. Most often at salinities less than 2 ppt.	May occur. Suisun slough and other sloughs may provide habitat for this species. There is designated critical habitat for this species south of the project area.
Longfin smelt *Spirinchus thaleichthys*	FC	ST	SHCP	Estuary. Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	May occur. Suisun slough and other sloughs may provide habitat for this species.
Sacramento splittail *Pogonichthys macrolepidotus*	—	SSC	SHCP	Estuary, freshwater marsh, Sacramento/San Joaquin flowing waters. Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay and associated marshes. Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	May occur. Suisun Slough is known to support this species.
Invertebrates					
Crotch's bumble bee *Bombus crotchii*	—	SC	—	Mediterranean, Pacific coast, western desert, Great Valley, and adjacent foothills through most of southwestern California. Habitat includes open grassland and scrub. Nests underground.	May occur. Grassland and riparian scrub habitat may provide nesting and foraging habitat for this species.

Notes: CNDDB = California Natural Diversity Database

[1] Legal Status Definitions

Federal:

FT Federally Listed as Threatened (legally protected)
FC Candidate for Listing under ESA
PT Proposed Federally Listed as Threatened (legally protected)

State:

FP Fully protected (legally protected)
SSC Species of special concern (no formal protection other than CEQA consideration)
SE State Listed as Endangered (legally protected)
ST State Listed as Threatened (legally protected)

Sources: CNDDB 2024; USFWS 2024; Solano County Water Agency 2012.

Table 3.4-2 Special-Status Plant Species Known to Occur in the Vicinity of the Project Area and Potential for Occurrence on the Project Area

Species	Listing Status[1] Federal	Listing Status[1] State	CRPR	Solano HCP Covered Species	Habitat	Potential for Occurrence
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	-	-	1B.1	-	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 0–755 feet in elevation. Blooms May–October (November). Annual.	May occur. Valley grassland in the project area may provide habitat suitable for this species.
Hispid salty bird's-beak *Chloropyron molle* ssp. *hispidum*	-	-	1B.1	-	Alkali playa, wetland. Meadows and seeps, playas, valley and foothill grassland. Damp alkaline soils, especially in alkaline meadows and alkali sinks with Distichlis. 3–509 feet in elevation. Blooms June–September. Annual.	May occur. Moist, alkaline soils are present in wetlands and grasslands in the project area, around the Central Pump Station.
Carquinez goldenbush *Isocoma arguta*	-	-	1B.1		Valley and foothill grassland. Alkaline soils, flats, lower hills. On low benches near drainages and on tops and sides of mounds in swale habitat. 5–165 feet in elevation. Blooms August–December. Perennial.	May occur. Moist, alkaline soils are present in wetlands and grasslands in the project area, around the Central Pump Station.
Contra Costa goldfields *Lasthenia conjugens*	FE	-	1B.1	SHCP	Alkali playa, wetland. Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland. Vernal pools, swales, low depressions, in open grassy areas. 3–1,476 feet in elevation. Blooms March–June. Annual.	May occur. Moist, alkaline soils are present in wetlands and grasslands in the project area, around the Central Pump Station.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	-	-	1B.1	-	Alkali playa, wetland. Coastal salt marshes, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 3–4,511 feet in elevation. Blooms February–June. Annual.	May occur. Moist, alkaline soils are present in wetlands and grasslands in the project area, around the Central Pump Station.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	-	-	1B.1	-	Wetland. Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Vernal pools and swales; adobe or alkaline soils. 16–5,709 feet in elevation. Blooms April–July. Annual.	May occur. Wetland and valley grassland in the project area may provide habitat suitable for this species.
Alkali milk-vetch *Astragalus tener* var. *tener*	-	-	1B.2	SHCP	Wetland. Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0–551 feet in elevation. Blooms March–June. Annual.	May occur. Moist, alkaline soils are present in wetlands and grasslands in the project area, around the Central Pump Station.
Brittlescale *Atriplex depressa*	-	-	1B.2	SHCP	Alkali playa, wetland. Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Usually in alkali scalds or alkaline clay in meadows or annual grassland; rarely associated with riparian, marshes, or vernal pools. 3–1,066 feet in elevation. Blooms April–October. Annual.	May occur Moist, alkaline soils are present in wetlands and grasslands in the project area, around the Central Pump Station.

Species	Listing Status[1] Federal	Listing Status[1] State	CRPR	Solano HCP Covered Species	Habitat	Potential for Occurrence
Pappose tarplant *Centromadia parryi* ssp. *parryi*	-	-	1B.2	SHCP	Chaparral, coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland. Vernally mesic, often alkaline sites. 7–1,378 feet in elevation. Blooms May–November. Annual.	May occur. Grassland and alkaline wetland habitat in the project area provide habitat suitable for this species.
San Joaquin spearscale *Extriplex joaquinana*	-	-	1B.2	-	Alkali playa. Chenopod scrub, alkali meadow, playas, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with Distichlis spicata, and Frankenia. 3–2,740 feet in elevation. Blooms April–October. Annual.	May occur. Moist, alkaline soils are present in wetlands and grasslands in the project area, around the Central Pump Station.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	-	-	1B.2	SHCP	Wetland. Freshwater and brackish marshes. Often found with Typha, Aster lentus, Rosa californica, Juncus spp., and Scirpus. Usually on marsh and slough edges. 0–16 feet in elevation. Blooms May–July (August), (September). Perennial.	May occur. Freshwater emergent wetland in the project area, north of the Central Pump Station and around Suisun Slough may provide habitat for this species.
California alkali grass *Puccinellia simplex*	-	-	1B.2	-	Meadows and seeps, chenopod scrub, valley and foothill grasslands, vernal pools. Alkaline, vernally mesic. Sinks, flats, and lake margins. 3–3,002 feet in elevation. Blooms March–May. Annual.	May occur. Grassland and alkaline wetland habitat in the project area provide habitat suitable for this species.
Long-styled sand-spurrey *Spergularia macrotheca* var. l*ongistyla*	-	-	1B.2	-	Marshes and swamps, meadows and seeps. Alkaline. 0–836 feet in elevation. Blooms February–May. Perennial.	May occur Grassland and alkaline wetland habitat in the project area provide habitat suitable for this species.
Saline clover *Trifolium hydrophilum*	-	-	1B.2	-	Wetland. Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 0–984 feet in elevation. Blooms April–June. Annual.	May occur. Grassland and alkaline wetland habitat in the project area provide habitat suitable for this species.

Notes: CRPR = California Rare Plant Rank

[1] Legal Status Definitions

Federal:

FE Federally Listed as Endangered (legally protected by ESA)

California Rare Plant Ranks (CRPR):

1B Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA).

CRPR Threat Ranks:

0.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)

0.2 Moderately threatened in California (20-80% occurrences threatened; moderate degree and immediacy of threat)

Sources: CNDDB 2024; USFWS 2024, CNPS 2024; Solano County Water Agency 2012.

3.4.2 Discussion

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 the U.S. Fish and Wildlife Service?

Less-than-significant impact with mitigation incorporated. Although the proposed project would install two new force mains and stormwater improvements primarily within previously disturbed areas, portions of the project area support degraded natural habitats (i.e., freshwater emergent wetland, seasonal wetland, annual grassland) or the work areas are adjacent to habitats that could provide low quality habitat for special-status plant and wildlife species.

Annual grassland within the project area could provide foraging habitat suitable for Swainson's hawk and white-tailed kite and urban trees adjacent to the project area provide suitable nesting habitat for these species. The freshwater emergent, seasonal wetlands, and adjacent annual grassland provide habitat suitable for special-status plants, and northwestern pond turtle. The annual grasslands provide nesting and foraging habitat potentially suitable for Crotch's bumble bee. Annual grasslands and seasonal wetlands provide habitat suitable for grasshopper sparrow, saltmarsh common yellowthroat, and Suisun song sparrow. Although no work is proposed within the Suisun City Marina or Suisun Slough, construction activities immediately adjacent to these areas could affect special-status fish such as the Delta smelt, longfin smelt, Sacramento splittail and Green sturgeon. In the long-term, stormwater improvements are expected to reduce pollutants discharged from the urban environment into storm drains, local creeks, and Suisun Marsh.

Loss of Swainson's Hawk, White-Tailed Kite and other Raptor Nests

The larger mature trees along the project alignment and alignment options could provide nesting sites for Swainson's hawk, white-tailed kite and common raptors such as red-tailed hawk, red-shouldered hawk, and great-horned owl and limited tree removal may be required. Northern harrier is a ground nesting species that could be found in grassland or marsh habitats near the project area. All raptor species are protected under Section 3503.5 of the Fish and Game Code and under the Migratory Bird Act (1918).

The proposed project would temporarily disturb up to 0.93 acres of annual grassland that provides low quality foraging habitat for Swainson's hawk. Construction would take 24 months, but would be temporary and would be staggered so that not all the annual grassland would be disturbed for the entire construction period. Additionally, the disturbed annual grassland areas would be restored to pre-project conditions following construction. Although, temporary disturbance of annual grassland would prevent Swainson's hawks from foraging in the area, there are higher quality foraging areas in the immediate vicinity (such as the Suisun Marsh, agricultural areas and fallow land) and temporary disturbance of 1 acre of marginal foraging habitat is not sufficient to reduce survival or reproductive success of Swainson's hawks in the area. Thus, the impact on foraging habitat for Swainson's hawk would be less than significant.

Construction activities, including tree removal, if needed, would elevate noise levels and cause disturbance to nesting or roosting raptor species on-site or adjacent to the project area. Construction would last approximately 24 months beginning in summer 2026. Thus, there is the potential for noise disturbance to negatively affect breeding or reproduction of special-status and protected raptors in or adjacent to the project area for two breeding seasons.

There are currently no known raptor nests in the project area. If active raptor nests are present in trees or on the ground adjacent to the project area during the raptor breeding season (February–August), project construction and tree removal could disturb or destroy active nests either by removal or increased activity and higher than ambient noise levels near the project area, potentially resulting in nest abandonment by the adults and mortality of chicks and eggs. These impacts would conflict with the Fish and Game Code Section 3503.5 and the Migratory Bird Treaty Act. Loss of an active nest of Swainson's hawk or other special-status raptors could result in a decline in local population numbers of species that are already rare. The loss of an active raptor nest or take of individuals from demolition or construction would be a significant impact.

Mitigation Measure 3.4-1: Avoid Disturbance of Swainson's Hawk, White-tailed kite, and Other Nesting Raptor Nests

- For project activities that begin between March 1 and September 15, including tree removal, qualified biologists will conduct preconstruction surveys for Swainson's hawk and other nesting raptors (including white-tailed kite) to identify active nests in and within 0.5 mile of the project area. The surveys will be conducted before the beginning of any construction activities (including vegetation removal) between March 1 and September 15, following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000).
- Impacts to nesting Swainson's hawks and other raptors will be avoided by establishing appropriate buffers around active nest sites identified during preconstruction raptor surveys. No project activity will commence within the buffer areas until a qualified biologist has determined, in coordination with California Department of Fish and Wildlife (CDFW), the young have fledged, the nest is no longer active, or reducing the buffer would not likely result in nest abandonment. CDFW guidelines recommend implementation of 0.25-mile-wide buffers for Swainson's hawks and 500-feet for other raptors, but the size of the buffer may be adjusted if a qualified biologist and FSSD, in consultation with CDFW, determine that such an adjustment would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist during and after construction activities will be required if the activity has potential to adversely affect the nest.
- All workers involved in the clearing of vegetation or other construction activities associated with construction of the proposed project will participate in a training session led by a qualified biologist prior to initiation of work. This training session will include information on the ecology and identification of special-status plant and wildlife species likely to occur in the project area. The training will also include information related to the federal Endangered Species Act and California Endangered Species Act and penalties associated with harm done to an individual of a listed species and the need to stop work and inform the on-site biologist in the event of a potential sighting.

Significance after Mitigation

Implementation of Mitigation Measure 3.4-1 would reduce significant impacts on nesting raptors, including Swainson's hawk and white-tailed kite, to a less-than-significant level because it would ensure that these species are not disturbed during nesting so that project construction would not result in nest abandonment and loss of eggs or young.

Special-Status Plants

The freshwater emergent wetland, seasonal wetland, and annual grassland habitat in the project area provide low quality habitat for special-status plant species, including those associated with alkaline soils, as listed in Table 3.4-2. No floristic type surveys have been conducted for the project. As such, there is potential for these plants to occur in these habitats within the project area. Ground disturbance associated with the proposed project could result in loss of special-status plants if they are present. In addition to direct removal of individuals and habitat during disking or stripping of vegetation, grading, or other construction-related disturbances, plants could suffer other direct physical damage, including breaking, crushing, and burying. Damaged plants may experience altered growth and development, or reduced or eliminated seed-set and reproduction, and mortality of individuals or populations can eventually result.

Although some of these species could occur within the banks of Suisun Slough, no work is proposed within the slough or its banks and thus no impact to special-status plants would occur in habitats associated with the slough. Therefore, no impacts to marsh associated special-status plants are expected, but loss of special-status plants associated with freshwater emergent and seasonal wetlands, alkaline sinks and flats, and annual grassland could result. Loss of special-status plants would be a significant impact.

Mitigation Measure 3.4-2: Avoid or Mitigate for Loss of Special-status Plants

FSSD will implement the following measures to reduce potential impacts on special-status plants:

- Prior to project initiation and during the blooming period for the special-status plant species with potential to occur in the project area, a qualified botanist will conduct protocol-level surveys for special-status plants in areas where potentially suitable habitat would be removed or disturbed by project activities. Table 3.4-3 summarizes the typical blooming periods for special-status plant species with potential to occur on the project area.

Table 3.4-3 Typical Blooming Period for Special-Status Plants with Potential to Occur in the Project Area[1]

Species	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*				■	■	■	■	■	■		
Hispid salty bird's-beak *Chloropyron molle* ssp. *hispidum*					■	■	■	■			
Soft salty bird's-beak *Chloropyron molle ssp. molle*						■	■	■	■	■	
Carquinez goldenbush *Isocoma arguta*							■	■	■	■	■
Contra Costa goldfields *Lasthenia conjugens*		■	■	■	■						
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	■	■	■	■	■						
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*			■	■	■	■					
Alkali milk-vetch *Astragalus tener* var. *tener*		■	■	■	■						
Brittlescale *Atriplex depressa*			■	■	■	■	■	■	■		
Pappose tarplant *Centromadia parryi* ssp. *parryi*				■	■	■	■	■	■	■	
San Joaquin spearscale *Extriplex joaquinana*			■	■	■	■	■	■	■		
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*				■	■	■					
California alkali grass *Puccinellia simplex*		■	■	■							
Long-styled sand-spurrey *Spergularia macrotheca* var. l*ongistyla*	■	■	■	■							
Saline clover *Trifolium hydrophilum*			■	■	■						

Notes: [1] This is the published blooming period for the species across their entire range and through history. The actual blooming period for any species at a given location each year is variable and should be based on observations of nearby reference populations.

Source: Data compiled by Ascent in 2024.

- If no special-status plants are found, the botanist will document the findings in a letter report to FSSD and no further mitigation will be required.
- If special-status plant species are found that cannot be avoided during construction, FSSD will consult with CDFW and/or US Fish and Wildlife Service (USFWS), as appropriate depending on species status, to determine the appropriate mitigation measures for direct and indirect impacts that could occur because of project construction and will implement the agreed-upon mitigation measures to achieve no net loss of occupied habitat or individuals. Mitigation measures may include preserving and enhancing existing populations, creation of off-site populations on project mitigation sites through seed collection or transplantation, and/or restoring or creating suitable habitat in sufficient quantities to achieve no net loss of occupied habitat and/or individuals. Potential mitigation sites could include suitable locations on FSSD lands outside of the project area. A mitigation and monitoring plan will be developed describing how unavoidable losses of special-status plants will be compensated.

- If relocation efforts are part of the mitigation plan, the plan will include details on the methods to be used, including collection, storage, propagation, receptor site preparation, installation, long-term protection and management, monitoring and reporting requirements, success criteria, and remedial action responsibilities should the initial effort fail to meet long-term monitoring requirements.

Success criteria for preserved and compensatory populations will include:

- The extent of occupied area and plant density (number of plants per unit area) in compensatory populations will be equal to or greater than the affected occupied habitat.

Compensatory and preserved populations will be self-producing. Populations will be considered self-producing when:

- plants reestablish annually for a minimum of 5 years with no human intervention such as supplemental seeding; and
- reestablished and preserved habitats contain an occupied area and flower density comparable to existing occupied habitat areas in similar habitat types in the project vicinity.

If offsite mitigation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, success criteria such as those listed above and other details, as appropriate to target the preservation of long-term viable populations.

Significance after Mitigation

Implementing Mitigation Measure 3.4-2 would reduce significant impacts on special-status plants to a less-than-significant level because it would require FSSD to identify and avoid special-status plants or provide compensation for loss of special-status plants through enhancement of existing populations, creation and management of off-site populations, conservation easements, or other appropriate measures.

Northwestern Pond Turtle

The freshwater emergent, seasonal wetlands, drainage ditches, and annual grassland provide low quality habitat for northwestern pond turtle due to fragmentation of available habitat, refuse accumulation, and water pollution. No surveys for northwestern pond turtle have been conducted in the project area. Ground disturbance associated with the proposed project would result in loss of individuals or nests if they are present. In addition to direct killing of individuals and removal of habitat during disking or stripping of vegetation, grading, excavation or other construction-related disturbances, pond turtles could suffer other direct physical damage, including crushing, and burying, that ultimately results in death. Loss of northwestern pond turtle individuals or occupied nests would be a significant impact.

Mitigation Measure 3.4-3: Avoid or Minimize Impacts on Northwestern Pond Turtle

FSSD will implement the following measures to reduce potential impacts on northwestern pond turtle:

- Pre-construction surveys for northwestern pond turtle will be conducted by a qualified biologist 14 days before and 24 hours before the start of ground-disturbing activities (including vegetation removal) where suitable habitat exists (e.g., along seasonal wetlands and freshwater emergent wetlands).
- If northwestern pond turtles or their nests are observed during pre-construction surveys, a qualified biologist will be on-site to monitor construction in suitable northwestern pond turtle habitat. Northwestern pond turtles found within the construction area will be allowed to leave of their own volition or will be captured by a qualified biologist and relocated out of harm's way to the nearest aquatic habitat suitable for the species immediately upstream or downstream from the project site.
- If northwestern pond turtle nests are identified in the work area during pre-construction surveys, a 300-foot no disturbance buffer shall be established between the nest and any areas of potential disturbance. Buffers will be clearly marked with temporary fencing. Construction will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest and made it safely to aquatic habitat outside the work area or the nest is deemed inactive by a qualified biologist.

- Wetland habitat outside of the proposed disturbance area will be protected with exclusion fencing to ensure that individual northwestern pond turtles do not wander into the work area during the construction period. The fence will be established in all areas subject to construction disturbance after removal of vegetation as described below. Exclusion fencing will be installed outside of wetland boundaries unless wetland work is expressly permitted by the resource agencies (e.g., US Army Corps of Engineers [USACE], San Francisco Bay Regional Water Quality Control Board [SFBRWQCB], CDFW). Exclusion fencing will be made of a material that does not allow small mammals or turtles to pass through, such as a properly installed silt fence or other material (e.g., plastic or metal) so that the outside is too smooth to be climbed, and will be buried at least 6 inches below the ground surface and extend a minimum of 2 feet above ground. The fence should include scape funnels that allow animals to leave the construction area but not return. The final design and proposed location of the fencing will be submitted to CDFW for review and approval prior to installation.
- Prior to installation of the exclusion fence described above, efforts will be made to ensure that northwestern pond turtles are not present in wetland areas or immediately adjacent uplands subject to potential impact from vegetation removal or construction activities. Prior to removal of vegetation, a qualified biologist will walk the work zone to ensure no northwestern pond turtles are present. Vegetation will be removed using hand tools, such as weed-whackers, from all construction areas within 50 feet of wetland habitat. Immediately after vegetation removal is complete and no evidence of western pond turtle presence is observed within the construction zone, the temporary exclusion fencing will be placed around the defined work area prior to the start of construction activities to prevent wildlife from moving into construction areas. A biological monitor approved by CDFW will be present during vegetation clearing and installation of the exclusion fence. Fencing will remain in place throughout the duration of construction and shall be fully maintained and inspected daily when project activities are underway. Repairs to the fencing will be made within 24 hours of identifying the need for repair. After construction is completed, the fencing will be completely removed.

Significance after Mitigation

Implementing Mitigation Measure 3.4-3 would reduce significant impacts on northwestern pond turtle to a less-than-significant level because it would require FSSD to retain a qualified biologist to survey for northwestern pond turtle, monitor the construction area if northwestern pond turtles are observed during the pre-construction surveys, and oversee the removal of vegetation from the construction area. Mitigation would also require the preparation and presentation of a worker environmental awareness training and protection of adjacent habitat by installing exclusion fencing.

Crotch's Bumble Bee

Annual grassland provides habitat that may be suitable for Crotch's bumble bee foraging and nesting. Initial ground disturbance and vegetation removal activities could result in direct loss of bumble bees foraging aboveground or in underground nests. The project area does not provide overwintering habitat. While project implementation could result in loss of individual Crotch's bumble bees or Crotch's bumble bee nests and loss of foraging and breeding habitat for the species, it is unlikely that the project area supports a high concentration of bumble bee colonies due to the lack of documented occurrences nearby, and project implementation is not expected to result in loss of a significant number of bumble bees, if present. While loss of individual Crotch's bumble bees or a colony because of project activities may not cause the population to drop below self-sustaining levels, threaten to eliminate the species, or substantially reduce the range of the species, the population status of this species is poorly understood, and loss of a colony could have a substantial effect on the local population. Loss of Crotch's bumble bees would be a potentially significant impact.

Mitigation Measure 3.4-4a: Implement Limited Operating Period during Crotch's Bumble Bee Colony Active Period

Because the project area supports foraging and nesting habitat but no overwintering habitat, the following limited operating period will be implemented:

- Initial ground disturbing work (e.g., grading, vegetation removal, staging) will take place between August 15 and March 15, if feasible, to avoid impacts on nesting Crotch's bumble bees.

If this limited operating period is determined to be infeasible, Mitigation Measure 3.4-4b will be implemented.

Mitigation Measure 3.4-4b: Conduct Focused Surveys and Implement Avoidance Measures for Crotch's Bumble Bee

A qualified biologist familiar with bumble bees of California and experienced using survey methods for bumble bees will conduct a habitat assessment and focused survey for Crotch's bumble bee before the start of any ground-disturbing activities. Surveys will be performed when Crotch's bumble bee is most likely to be identified, typically from April through August when floral resources and ideal weather conditions are present, and will follow the methods in *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (CDFW 2023) or any subsequent protocol approved by CDFW. FSSD will submit a survey report to CDFW within 1 month of survey completion and notify CDFW within 24 hours if Crotch's bumble bees are detected.

If Crotch's bumble bees are detected during the focused survey, appropriate avoidance measures will be implemented. Avoidance measures may include, but not be limited to, the following:

- Protective buffers will be implemented around active nesting colonies or overwintering queens until these sites are no longer active. A qualified biologist, in consultation with CDFW, will determine the appropriate buffer size to protect nesting colonies or overwintering queens.
- If impacts on Crotch's bumble bee cannot be avoided, the applicant will obtain an incidental take permit (ITP) from CDFW and implement all avoidance measures included in the ITP.

Significance after Mitigation

Implementation of Mitigation Measures 3.4-4a and 3.4-4b would reduce the potential impact on Crotch's bumble bee to a less-than-significant level by requiring implementation of a limited operating period, if feasible, or focused surveys for bumble bees and implementation of measures to avoid mortality of the Crotch's bumble bees if nests or overwintering queens are detected.

Special-Status and Other Nesting Birds

Vegetation removal and ground disturbance associated with construction of the proposed project could result in direct destruction nests of special-status birds such as grasshopper sparrow, saltmarsh common yellowthroat, Suisun song sparrow, and other birds protected under California Fish and Game Code and the Migratory Bird Treaty Act if construction takes place during the nesting season, typically February 1 to August 31. Project construction could also result in noise or visual stimuli that distress nesting birds causing them to abandon their nests, leading to the mortality of chicks and eggs. The loss of some nests of common migratory bird species (e.g., mourning dove, American robin, and scrub jay) would not necessarily have a substantial impact on these species overall because it would not result in a substantial effect on their populations locally or regionally. However, the destruction of any native or migratory bird nest is a violation of the Migratory Bird Treaty Act and Section 3503 of the Fish and Game Code. Furthermore, the loss of active nests of special-status bird species could have a substantial effect on reproductive success and reduce local population numbers. This would be considered a significant impact.

Mitigation Measure 3.4-5: Avoid Disturbing Active Bird Nests Including Grasshopper Sparrow, Saltmarsh Common Yellowthroat, Suisun Song Sparrow

FSSD or its contractor will implement the following measures to avoid disturbing migratory bird nests including nests of special-status birds:

- Vegetation and tree removal activities will be carried out during the nonbreeding season (September 1-January 31) for migratory birds to the degree feasible. If project activities are conducted during the nonbreeding season, no further mitigation will be required.
- For construction activities occurring between February 1 and August 31, FSSD or its construction contractor will retain a qualified biologist to conduct preconstruction surveys for nesting birds and to identify active nests on and within 500 feet of the project area. The surveys will be conducted no more than 14 days before the beginning of construction activities that could remove vegetation or otherwise disturb nesting birds.

- If active nests are found, the biologist will establish appropriate buffers around the nests. The qualified biologist will determine an adequate buffer for the species and nest. Factors to be considered for determining buffer size include presence of natural buffers provided by vegetation or topography, nest height above ground, baseline levels of noise and human activity, species sensitivity, and proposed project activities. Generally, buffer size for common passerine bird nests will be at least 20 feet. Buffers for special-status bird species' nests will be a minimum of 50 feet unless a qualified biologist in consultation with CDFW determines a reduced buffer will not be likely to adversely affect the nest. No project activity will commence within the buffer area until a qualified biologist confirms that any young have fledged and the nest is no longer active. Monitoring of the nest by a qualified biologist will be required if the activity has the potential to adversely affect the nest. Nest buffers will be increased if the monitoring biologist determines birds within active nests are showing behavioral signs of agitation (e.g., standing up from a brooding position, flying off the nest) during project activities.

Significance after Mitigation

Implementation of Mitigation Measure 3.4-5 would reduce potentially significant impacts on special-status and other nesting birds to a less-than-significant level because it would require measures to avoid disturbances of active nests so that project construction would not result in nest abandonment and loss of eggs or young.

Special-Status Fish

Delta smelt, longfin smelt, Sacramento splittail, and Green sturgeon have the potential to occur in Suisun Slough. While stormwater improvements proposed as part of the project are expected to reduce pollutants discharged from the urban environment into storm drains, local creeks, and Suisun Marsh in the long-term, project construction could result in potential short-term water quality impacts to Suisun Slough and other waterways and could adversely affect special-status fish species. This would be a potentially significant impact.

Work near Suisun Slough will consist of open trenching. Excavation will be done with the use of an excavator, front loader, dump truck, and water pump if surface or groundwater is encountered. Current USFWS noise impact thresholds for fish less than 2 grams is 183 decibels (dB) cumulative Sound Exposure Level (SEL), 187 dB cumulative SEL for fish ≥2 grams. The Solano HCP includes the same thresholds but at a distance of 30 feet. Noise analysis for construction in the vicinity of Suisun Slough would have a SEL of 125.9 dB cumulative SEL at 30 feet, which is below the cumulative thresholds set by the resource agencies. As such the proposed project would have no effect on special-status fish species from construction noise.

The project would also use microtunneling for the railroad crossing. The distance from the railroad crossing to the nearest canal that is connected to Suisun Slough is approximately 500 feet, and the distance to Suisun Slough is approximately 1,400 feet south. Respectively, the SEL values would be 93.7 and 81.9. These values are below the cumulative noise threshold set by the resource agencies. As such, the proposed project would have no effect on special-status fish species from construction noise due to microtunneling.

The project area is outside of the Suisun Slough and Suisun City Marina, however, there are storm drains in the project vicinity. As such sediment and erosion from construction-related ground disturbance could lead to siltation in Suisun Slough and adjacent waterways that could adversely affect special-status fish species if present. Potential adverse effects include covering spawning gravels, decreased respiratory function in fish, increasing turbidity levels and diminishing light penetration to submergent vegetation, and raising water temperatures. However, the proposed project must comply with and obtain coverage under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit. The NPDES Construction General Permit requires development and implementation of a project-specific stormwater pollution prevention plan (SWPPP) that includes best management practices (BMPs) for erosion and sediment control. Potential BMPs could include covering exposed soils, installing filter fabric to prevent erosion, using secondary containment to contain spills, and maintaining spill kits in high-risk areas. Implementation of the project-specific SWPPP and associated BMPs would ensure that the effects on water quality would be minimized. In addition, as discussed in Chapter 2, Section 2.5, "Project Approvals," the proposed project would be required to obtain permits and approvals from USACE, San Francisco Bay Conservation and Development Commission, SFBRWQCB, and CDFW. Permits and approvals from these regulatory agencies would require development and implementation of BMPs to avoid and minimize impacts to water quality.

Microtunneling to install the force mains under the railroad tracks also has the potential to affect water quality. Although the proposed microtunneling area is approximately 600 feet from the nearest drainage canal and the bottom substrate is unknown, the potential for an inadvertent release (aka, frac-out) that could discharge pollutants into the canal cannot be dismissed. This impact would be potentially significant.

Mitigation Measure 3.4-6: Develop and Implement a Frac-Out Contingency Plan

For the microtunneling component, FSSD will require the contractor to develop a Frac-out Contingency Plan. FSSD will submit the Frac-out Contingency Plan to the appropriate resource agencies (CDFW, SFBRWQCB, USACE, USFWS) for review prior to the start of construction of any pipeline that would use microtunneling in proximity to surface waters. The Frac-out Contingency Plan will be implemented where microtunneling installation under a waterway or unknown substrate canal will occur to avoid, minimize, or mitigate for potential project impacts during microtunneling, as specified in the Frac-out Contingency Plan. The Frac-out Contingency Plan will include, at a minimum:

- Measures describing training of construction personnel about monitoring procedures, equipment, materials and procedures in place for the prevention, containment, clean-up (such as creating a containment area and using a pump, using a vacuum truck), and disposal of released bentonite slurry, and agency notification protocols.
- Methods for preventing frac-out include maintaining pressure in the borehole to avoid exceeding the strength of the overlying soil.
- Methods for detecting an accidental release of bentonite slurry that include: (a) monitoring by a minimum of one biological monitor throughout drilling operations to ensure swift response if a frac-out occurs; (b) continuous monitoring of drilling pressures to ensure they do not exceed those needed to penetrate the formation; (c) continuous monitoring of slurry returns at the exit and entry pits to determine if slurry circulation has been lost; and (d) continuous monitoring by spotters to follow the progress of the drill bit during the pilot hole operation, and reaming and pull back operations.
- Protocols that the contractor would follow if there is a loss of circulation or other indicator of a release of slurry.
- Cleanup and disposal procedures and equipment the contractor would use if a frac-out occurs.
- If a frac-out occurs, the contractor will immediately halt work, implement the measures outlined in the Frac-out Contingency Plan to contain, clean-up, and dispose of the bentonite slurry, and, if the frac-out occurs in the water channel, notify and consult with resource agencies before microtunneling activities can begin again.

Significance after Mitigation

Implementation of Mitigation Measure 3.4-6 would avoid and minimize potential impacts during construction of the proposed project to protect special-status fish and other adjacent aquatic resources from potential project related effects from microtunneling, thus reducing potential impacts to less than significant.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

Less-than-significant impact. The seasonal wetland by the Central Pump Station (0.14 acres) is best characterized as the Alkali Weed - Salt Grass Playas and Sinks vegetation alliance. Emergent wetlands in the project area along Suisun Slough consist of uniform stands of hardstem bulrush (*Schoenoplectus acutus*) and common reed (*Phragmites australis*) and are described as Hardstem Bulrush and Common Reed Marsh vegetation alliances. All of these alliances are considered sensitive natural communities by CDFW. The Hardstem Bulrush and Common Reed Marsh vegetation alliances along Suisun Slough would be avoided and would not be affected by project implementation. The Alkali Weed – Salt Grass Playas and Sink vegetation alliance by the Central Pump Station is within the disturbance area of the project and would be directly affected by construction activities. However, all impacts to sensitive natural communities would be temporary and vegetation would be restored to the species assemblages present prior to construction. Therefore, because all impacts to sensitive natural communities would be temporary and all areas would be restored, this impact would be less than significant. No mitigation is required.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less-than-significant impact with mitigation incorporated. Construction of the proposed project would result in the fill of approximately 0.14 acres of seasonal wetland, 0.46 acres of freshwater emergent wetland, and 0.08 acres of drainage ditch. Although other potential waters of the United States and state, such as open water (Suisun Slough) and riparian scrub, occur within the survey area of the project area, these features are outside of the proposed construction area and would be avoided. Nevertheless, project implementation would result in temporary impacts of up to 1.01 acres of state and federally protected wetlands. Impacts to the state and federally protected waters would be addressed through obtaining Section 404 and Section 401 permits as described in Section 2.5 of Chapter 2, "Project Description," complying with the permit conditions, and restoring all areas to pre-project conditions per the permit terms. However, as described under Impact 3.4.2a, the potential for an inadvertent release (aka, frac-out) that could discharge pollutants into the adjacent canal would be potentially significant.

Mitigation Measure 3.4-6: Develop and Implement a Frac-Out Contingency Plan
Implement Mitigation Measure 3.4-6 above.

Significance after Mitigation
Mitigation Measure 3.4-6 would minimize potential inadvertent discharges to adjacent waterways during construction, which would protect water quality and habitat function of protected wetlands. This impact would be less than significant.

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?

No Impact. Wildlife corridors are features that provide connections between two or more areas of habitat that would otherwise be isolated and unusable. Often drainages, creeks, or riparian areas are used by wildlife as movement corridors as these features can provide cover and access across a landscape. Although portions of the project are undeveloped, they do not contain any important wildlife corridors because the undeveloped portions of the project area are surrounded by developed uses. Additionally, the project area does not support known native wildlife nursery sites, such as deer fawning areas or colonial nesting bird rookeries, and the project would not affect habitat that could potentially support maternity bat roosts (e.g. bridges, rock outcrops, caves and mines, or suitable trees). Temporary construction for the installation of the force mains and stormwater improvements, therefore, 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. No impact would occur, and no mitigation is required.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less-than-significant impact with mitigation incorporated. The cities of Fairfield and Suisun City have multiple policies relating to the protection of biological resources in their respective General Plans, and ordinances such as the tree conservation ordinance, which would apply if any trees need to be removed. FSSD would comply with the city tree ordinances, as applicable, for any tree removal and any other work within the dripline of trees. Although there are other local policies such as the Suisun Marsh Preservation Act of 1977 (Marsh Act) and the Suisun Marsh Protection Plan within the Suisun Marsh Primary and Secondary Management Areas, the project area is outside of those management areas and these plans, therefore, do not apply to the project. As discussed above under Impacts 3.4.2a and c, the project would have a potentially significant impact on special-status species and state and federally protected wetlands.

Mitigation Measure 3.4-1: Avoid Disturbance of Swainson's Hawk, White-tailed kite, and Other Nesting Raptor Nests
Implement Mitigation Measure 3.4-1 above.

Mitigation Measure 3.4-2: Avoid or Mitigate for Loss of Special-status Plants
Implement Mitigation Measure 3.4-2 above.

Mitigation Measure 3.4-3: Avoid or Minimize Impacts on Northwestern Pond Turtle
Implement Mitigation Measure 3.4-3 above.

Mitigation Measure 3.4-4a: Implement Limited Operating Period during Crotch's Bumble Bee Colony Active Period
Implement Mitigation Measure 3.4-4a above.

Mitigation Measure 3.4-4b: Conduct Focused Surveys and Implement Avoidance Measures for Crotch's Bumble Bee
Implement Mitigation Measure 3.4-4b above.

Mitigation Measure 3.4-5: Avoid Disturbing Active Bird Nests Including Grasshopper Sparrow, Saltmarsh Common Yellowthroat, Suisun Song Sparrow
Implement Mitigation Measure 3.4-5 above.

Mitigation Measure 3.4-6: Develop and Implement a Frac-Out Contingency Plan
Implement Mitigation Measure 3.4-6 above.

Significance after Mitigation
Mitigation Measures 3.4-1 through 3.4-6 would avoid or minimize potential impacts to special-status species and state and federally protected wetlands by avoiding or compensating for impacts to special-status species and minimize potential inadvertent discharges to adjacent waterways during construction. This impact would be less than significant.

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?

No impact. The Solano HCP is currently being drafted and, as such, has not been formally adopted. There is no other adopted HCP, Natural Community Conservation Plan (NCCP), or other approved conservation plan guiding development in the project area. Additionally, the project is within an area identified as planned development in the current draft Solano HCP. Therefore, the proposed project would not be subject to the provisions of any adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan. Therefore, project implementation would not conflict with the current draft Solano HCP and would not conflict with the provisions of an adopted habitat conservation plan. No impact would occur, and no mitigation is required.

3.5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Substantially disturb human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

3.5.1 Environmental Setting

On March 6, 2023, a California Historical Resources Information System search of records along the proposed alignments, including the alignment options, and a 0.5-mile radius around the project area was conducted at the Northwest Information Center (NWIC), at Sonoma State University (File No. 22-1149) to determine whether precontact archaeological, historic-period archaeological, or built-environment historical resources have been previously recorded within the project area, the extent to which the project area has been previously surveyed, and the number and type of cultural resources within a 0.5-mile radius of the project area.

The records search identified one previously recorded resource within the project alignment, P-48-000549, the Southern Pacific Railroad. No previously recorded resources were identified within any of the other alignment options. The records search also found that 95 previous cultural resources surveys have been conducted that included portions of the project or alignment options.

Pedestrian surveys of the project and alignment options were conducted on July 31 and August 15, 2024, for built environment and archaeological features, respectively. These surveys did not result in the identification of built-environment features or archaeological sites (FSSD 2024).

3.5.2 Discussion

a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

No impact. The Southern Pacific Railroad (P-48-000549) has been recorded within the project alignment. However, it was previously evaluated and determined to be ineligible for the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR). No historical resources were identified within any of the other alignment options. Additionally, no historical resources pursuant to Section 15064.5 were identified within the project alignment or alignment options during the pedestrian survey. Therefore, no part of the project would demolish, relocate, or alter a historical resource. Because no historical resources are within the project alignment or alignment options, the project would not cause a substantial adverse change in the significance of a historical resource. Therefore, there would be no impact, and no mitigation is required.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less-than-significant impact with mitigation incorporated. Although the NWIC records searches did not reveal any previously identified archaeological resources, project-related ground-disturbing activities could result in discovery or damage of yet undiscovered archaeological resources as defined in State CEQA Guidelines Section 15064.5. Therefore, this impact would be potentially significant.

Mitigation Measure 3.5-1: Protect Unanticipated Archaeological Resource Discoveries

In the event that a prehistoric archeological site (such as any unusual amounts of stone, bone, or shell) or a historic-period archaeological site (such as concentrated deposits of bottles or bricks, amethyst glass, or other historic refuse), is uncovered during grading or other construction activities, all ground-disturbing activity within 100 feet of the discovery will be halted until a qualified archaeologist can assess the significance of the find. FSSD will be notified by the contractor of the potential find and FSSD will retain a qualified archeologist to investigate its significance. If the find is a prehistoric archeological site, the geographically and culturally affiliated Native American group will be notified. Any previously undiscovered resources found during construction will be recorded on appropriate California Department of Parks and Recreation 523 forms and evaluated for significance under all applicable regulatory criteria. If the archaeologist determines that the find does not meet the CRHR standards of significance for cultural resources, construction may proceed. If the find is determined to be significant by the qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist shall work with FSSD to follow accepted professional standards such as further testing for evaluation or data recovery, as necessary. If artifacts are recovered from significant historic archaeological resources, they will be housed at a qualified curation facility. The results of the identification, evaluation, and/or data recovery program for any unanticipated discoveries will be presented in a professional-quality report that details all methods and findings, evaluates the nature and significance of the resources, and analyzes and interprets the results.

Significance after Mitigation

Implementation of Mitigation Measure 3.5-1 would reduce impacts to archaeological cultural resources to a less-than-significant level by requiring implementation of preservation options and proper curation if significant artifacts are recovered.

c) Substantially disturb human remains, including those interred outside of formal cemeteries?

Less-than-significant impact. There are no known burials within the project alignment or alignment options. However, the location of grave sites and Native American remains can occur outside of identified cemeteries or burial sites. Therefore, there is a possibility that unmarked, previously unknown Native American or other graves could be present within the project alignment or alignment options and could be uncovered by project-related construction activities. California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in Health and Safety Code Section 7050.5 and PRC Section 5097.

These statutes require that, if human remains are discovered, potentially damaging ground-disturbing activities in the area of the remains shall be halted immediately, and the county coroner shall be notified immediately. If the remains are determined by the coroner to be Native American, the Native American Heritage Commission (NAHC) shall be notified within 24 hours and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. Following the coroner's findings, the NAHC-designated Most Likely Descendant and the landowner shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments, if present, are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in PRC Section 5097.94.

In addition, compliance with Health and Safety Code Section 7050.5 and PRC Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. Therefore, this impact would be less than significant, and no mitigation is required.

3.6 ENERGY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Energy. 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?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

3.6.1 Environmental Setting

California relies on a regional power system composed of a diverse mix of energy sources, including:

- Petroleum: Petroleum products (gasoline, diesel, jet fuel) are consumed almost exclusively by the transportation sector, responsible for almost 90 percent of the petroleum consumed in the state (EIA 2020). In 2015, 15.1 billion gallons of gasoline were sold in California (CEC 2020). To meet CARB regulations, all gasoline and diesel fuel sold in California for motor vehicles is refined to be a specific blend of motor gasoline called California Reformulated Gasoline (EIA 2020).
- Natural gas: While the majority of natural gas consumers in California are residential and small commercial users, these users consume only about 35 percent of natural gas in the state. Larger volume gas consumers, such as utilities for electricity generation and industrial consumers, although fewer in number, consume the remaining 65 percent of natural gas used in the state (CPUC 2020). PG&E provides natural gas to Suisun City. PG&E's natural gas system comprises a 70,000 square-mile service area, including approximately 50,000 miles of natural gas pipeline.
- Electricity and renewables: In 2002, Senate Bill (SB) 1078 established a renewables portfolio standard (RPS) program. The program is jointly implemented by the California Public Utilities Commission and the California Energy Commission and requires all load-serving entities to procure 60 percent of their total electricity retail sales from renewable energy sources by 2030. Most retail sellers met or exceeded their 29-percent interim RPS target in 2018, including all large investor-owned utilities, which provide electricity to 75 percent of all utility customers (CPUC 2019; EIA 2019). PG&E is Suisun's primary electricity supplier and owns/operates a substation adjacent to the project alignment.
- Alternative fuels: Conventional gasoline and diesel may be replaced (depending on the vehicle's capability) with many alternative transportation fuels (e.g., biodiesel, hydrogen, electricity). The use of alternative fuels is encouraged through various statewide regulations and plans (e.g., Low Carbon Fuel Standard, Assembly Bill (AB) 32 Scoping Plan).

PG&E supplies electricity and natural gas in the project area. To comply with the state's renewable portfolio goals under SB 100 and AB 1020, the proportion of PG&E-delivered electricity generated from eligible renewable energy sources is anticipated to increase over the next three decades.

In 2022, PG&E provided its customers with 38 percent eligible renewable energy (i.e., biomass combustion, geothermal, small-scale hydroelectric, solar, and wind), 49 percent from nuclear power, 8 percent from large-scale hydroelectric, and 5 natural gas (PG&E 2023). The contribution of in- and out-of-state power plants depends on the precipitation that occurred in the previous year, the corresponding amount of available hydroelectric power, and other factors.

3.6.2 Discussion

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less-than-significant impact. Energy would be consumed during project construction to operate and maintain construction equipment and transport materials. It also would be consumed for worker commutes. Levels of construction-related fuel consumption were calculated using equipment assumptions consistent with the CalEEMod Version 2022.1 (CAPCOA 2016) and fuel consumption factors derived from CARB's On-Road Emissions Inventory (EMFAC2021) and Off-Road Diesel Engine Emission Factors (OFFROAD2021). See Appendix B for detailed calculations. An estimated 3,842 gallons of gasoline, 355,734 gallons of diesel, and 69,538 kilowatt-hours of electricity would be consumed during project construction, accounting for on-site equipment use and off-site vehicle travel for worker commutes and haul trips. This one-time energy expenditure required to construct the project would be nonrecoverable. However, energy needs for project construction would be temporary and would not require additional capacity or increase peak or base period demands for electricity or other forms of energy.

Project operation would be similar to existing conditions and would not increase energy demand. The project would generate minimal vehicle trips for maintenance because the project would not involve any land use development or require an increase in employees, and maintenance would be similar to existing conditions. Thus, the project would not increase the gasoline used for employee trips during operation. For these reasons, the project would not result in the inefficient, wasteful, or unnecessary consumption of energy resources during project construction or operation. This impact would be less than significant, and no mitigation is required.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

Less-than-significant impact. As discussed above, the project would not result in the inefficient, wasteful, or unnecessary consumption of energy resources. Furthermore, the new force mains and appurtenant structures would be operated in lieu of an existing force main that would accommodate existing operations and capacity, thus not resulting in increased energy demand above existing conditions. In addition, the planned stormwater improvements would not result in increased energy demand upon installation. The project would not conflict with or obstruct a state or local renewable energy or energy efficiency plan. This impact would be less than significant, and no mitigation is required.

3.7 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Geology and Soils. 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 California Geological Survey Special Publication 42.)	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☒	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

3.7.1 Environmental Setting

The project is located in the western area of the Great Valley Geomorphic Province. The Great Valley Geomorphic Province is an alluvial plain approximately 400 miles long and 50 miles wide in central California bordered by the Sierra Nevada mountains on the east and Coast Ranges on the west (Crawford & Associates, Inc. 2023). The project is located in the Holocene Alluvium geologic unit (County of Solano 2008).

The Cordelia Fault zone is the nearest active fault zone to the project area that has been delineated under the Alquist-Priolo Earthquake Fault zoning map (DOC 2024b). The Cordelia Fault Zone is located approximately 4.5 miles west of the project alignment.

The soil types underlying the project area consist of Capay clay (Cc), Sycamore silty clay loam (St), Alviso silty clay loam (An), and Made land (Ma) (USDA-NRCS 2024). The Made land soil type is artificial fill consisting of loose and medium dense granular soil that could be susceptible to liquefaction and lateral spreading. Capay clay and Alviso silty clay loam have high shrink-swell potential and Sycamore silty clay loam has moderate shrink-swell potential (USDA 1977). Groundwater in the project area is expected to be between 3 and 10 feet below ground surface (Crawford & Associates, Inc. 2023).

3.7.2 Discussion

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 California Geological Survey Special Publication 42.)

No impact. The project area is not within an Alquist-Priolo Fault Zone or traversed by a fault. The nearest Alquist-Priolo Fault Zone, Cordelia fault, is located approximately 4.5 miles west of the project alignment and alignment options (DOC 2024b). The proposed project would construct dual force mains, appurtenant infrastructure, and stormwater improvements. The proposed project would be designed to meet current California seismic structure codes in accordance with the California Building Code's risk category and American Society of Civil Engineers' seismic design parameters. No people or structures would be subject to additional adverse effects caused by the rupture of a known earthquake zone. No impact from fault rupture would occur, and no mitigation is required.

ii) Strong seismic ground shaking?

Less-than-significant impact. Solano County is located within an area of Northern California known to be seismically active. While no active fault zones underline the project alignment or alignment options, the project would be near an active fault zone and could experience strong seismic ground shaking. However, the proposed force mains and appurtenant infrastructure would be designed in accordance with the latest California Building Code's risk category and American Society of Civil Engineers' seismic design parameters, making the pipelines at less risk of failure. In addition, the project does not involve construction of structures for human occupancy. The impact from seismic ground shaking would be less than significant, and no mitigation is required.

iii) Seismic-related ground failure, including liquefaction?

Less-than-significant impact with mitigation incorporated. Strong ground shaking caused by large earthquakes could induce ground failure such as liquefaction and lateral spreading. Liquefaction is a ground failure hazard that typically occurs during seismic events in areas where loose sandy soils exist below shallow groundwater. Lateral spreading occurs when a soil layer liquefies at depth and causes horizontal movement or displacement of the soil.

Portions of the project area are underlain by Made land (artificial fill). Fill materials that consist of loose and medium dense granular soil where groundwater is expected to occur could be susceptible to liquefaction and lateral spreading. Liquefaction and lateral spreading could occur in portions of the project area where saturated granular fill materials exist. The damage to the proposed force mains due to seismic-related ground failure (e.g., liquefaction and lateral spreading) would be potentially significant.

Mitigation Measure 3.7-1: Site-Specific Geotechnical Investigation

FSSD will have a professional geotechnical engineer conduct a site-specific geotechnical investigation to evaluate the potential for geotechnical hazards to occur on-site in accordance with the recommendations of the California Geological Survey. A geotechnical investigation report will be prepared and will provide site-specific recommendations for the force mains, appurtenant infrastructure, and fill materials in any locations where there is a potential for an elevated risk of geological hazards. The geotechnical investigation report will specify exact design coefficients that are needed by structural engineers to determine the type and sizing of structural and fill materials. Th recommendations will be subject to performance criteria imposed by the California Building Code, as applicable. The geological investigation report will be prepared by a registered civil engineer or certified engineering geologist and include appropriate measures that will be implemented during construction to minimize seismic hazards and ensure structural safety of the proposed force mains and appurtenant infrastructure.

Significance after Mitigation

Mitigation Measure 3.7-1 would require a site-specific geotechnical investigation and implementation of the geotechnical recommendations that would address risks from geotechnical hazards. Because mitigation requires implementation of geotechnical recommendations, the impact from seismic-related ground failure, liquefaction and lateral spreading would be reduced to a less-than-significant level.

iv) Landslides?

No impact. The project area and greater vicinity are generally flat. No steep slopes that are prone to landslides are located on-site or adjacent to the project area. No impact from landslides is anticipated, and no mitigation is required.

b) Result in substantial soil erosion or the loss of topsoil?

Less-than-significant impact. Construction activities (e.g., excavation and trenching) would expose soils and could result in soil erosion. Construction is assumed to proceed at an average rate of 30 linear feet per day. Upon completion of construction, all affected areas would be repaved/revegetated and returned to pre-project conditions or would include enhanced natural vegetation (with respect to the stormwater improvements along the frontage of the PG&E substation). The area where soil would be temporarily exposed would be small. As discussed in Section 3.10, "Hydrology and Water Quality," a project-specific SWPPP and associated BMPs would be implemented for erosion and sedimentation control. Implementation of the SWPPP and associated BMPs would ensure that impact from erosion would be less than significant, and no mitigation is required.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less-than-significant impact with mitigation incorporated. No impact from landslides is anticipated (see Impact 3.7.2a.iv). Subsidence is commonly associated with severe, long-term withdrawal of groundwater in excess of recharge that eventually leads to overdraft of the aquifer. Construction of the proposed project could require temporary groundwater dewatering. Groundwater dewatering, if required, would be localized and would temporary during construction in areas with high groundwater. No long-term groundwater withdrawal would occur. The short-term dewatering would not result in subsidence.

However, as described under Impact 3.7.2a.iii, impacts from liquefaction and lateral spreading would be potentially significant.

Mitigation Measure 3.7-1: Site-Specific Geotechnical Investigation

Implement Mitigation Measure 3.7-1 above.

Significance after Mitigation

Mitigation Measure 3.7-1 would require a site-specific geotechnical investigation and implementation of the geotechnical recommendations that would address risks from geotechnical hazards. Because mitigation requires implementation of geotechnical recommendations, the impact from seismic-related ground failure, liquefaction and lateral spreading would be reduced to a less-than-significant level.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property?

Less-than-significant impact with mitigation incorporated. Expansive soils generally occur when clay minerals expand during saturation and shrink in volume when dry. The soil types underlying the project area consist of Capay clay (Cc), Sycamore silty clay loam (St), Alviso silty clay loam (An), and Made land (Ma) (USDA-NRCS 2024). Capay clay and Alviso silty clay loam have high shrink-swell potential and Sycamore silty clay loam has moderate shrink-swell potential (USDA 1977). Soil with high and moderate shrink-swell potential could damage the proposed force mains and appurtenant infrastructure, which would be considered a significant impact.

Mitigation Measure 3.7-1: Site-Specific Geotechnical Investigation

Implement Mitigation Measure 3.7-1 above.

Significance after Mitigation

Implementation of Mitigation Measure 3.7-1 would require a site-specific geotechnical investigation to identify on-site geotechnical hazards and implementation of the geotechnical recommendations from that investigation to address risks from geotechnical hazards, including recommendation for compaction of fill materials. As a result, impacts related to potential risks from expansive soils would be reduced to a less-than-significant level with mitigation incorporated.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No impact. The proposed project is a force main project and does not include septic tanks or alternative wastewater disposal systems. No impact would occur, and no mitigation is required.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less-than-significant impact. Paleontological resources are remains of prehistoric animals and plants that are at least 11,000 years old. The project area is in the Holocene Alluvium (recent – 10,000 years old) geologic unit. The alluvial deposits in this geologic unit contain vertebrate and invertebrate fossils of extant, modern taxa, which are generally not considered paleontologically significant (County of Solano 2008). In addition, portions of the project alignment and alignment options would be located parallel to the existing force main as well as adjacent to existing development. Therefore, the project alignment and alignment options would occur in the vicinity of previously disturbed sediment that is unlikely to contain significant fossil remains. This impact would be less than significant, and no mitigation is required.

3.8 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.8.1 Environmental Setting

Greenhouse gases (GHGs) are gases in the earth's atmosphere that trap heat through the greenhouse effect. Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The greenhouse effect occurs when solar radiation enters the earth's atmosphere, and GHGs absorb infrared radiation rather than reflect it back into space. This trapping of infrared radiation results in the warming of the atmosphere and is responsible for maintaining a habitable climate on earth. However, GHG emissions from human activities have greatly increased GHG concentrations in the atmosphere and caused warming far above natural levels, resulting in global climate change. It is "extremely likely" that more than half of the observed increase in average global temperature from 1951 to 2010 was caused by anthropogenic (i.e., human-caused) increases in GHG concentrations (IPCC 2014: 5). By adoption of AB 32, the California Global Warming Solutions Act of 2006, and SB 97, the State of California has acknowledged that GHGs cause adverse environmental impacts. AB 32 mandates that emissions of GHGs must be capped at 1990 levels by the year 2020 (Health and Safety Code Section 38530).

In August 2016, Governor Brown signed SB 32, which extends California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which requires CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by 2030. This target was then superseded by AB 1279, establishing the targets of achieving carbon neutrality and an 85 percent reduction from a 1990 inventory by no later than 2025.

On December 16, 2022, CARB adopted the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), which traces the state's pathway to achieve its carbon neutrality and an 85 percent reduction in 1990 emissions goal by 2045 using a combined top-down, bottom-up approach under various scenarios. It identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals.

Climate change is a global issue because GHGs are global pollutants, and even local GHG emissions contribute to global impacts. Therefore, although the emissions of one project would not cause global climate change, GHGs from multiple projects worldwide result in a cumulative impact with respect to global climate change. Many GHGs have long atmospheric lifetimes, from one to several thousand years, and persist in the atmosphere for long enough durations to be dispersed around the globe. Although the lifetime of any particular GHG molecule is dependent on multiple variables and cannot be determined with certainty, scientists have concluded that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration, resulting in a net increase in atmospheric CO_2 (IPCC 2013: 467).

BAAQMD's approach to developing significance thresholds for climate impacts is to use a "fair share" approach to determine whether an individual project's GHG emissions would be cumulatively considerable. If a project would contribute its "fair share" of what is needed to achieve the state's long-term GHG reduction goals, then the lead agency can find that the project is adequately contributing to solving the problem of global climate change and that project's impact is not significant. BAAQMD offers two pathways to land use development projects to demonstrate that projects are doing their "fair share" in assisting the state in meeting the 2045 carbon neutrality target. These include:

A. Projects must include, at a minimum, the following project design elements:
    1. Buildings
        a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
        b. The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
    2. Transportation
        a. The project will achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target that reflects the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory: Evaluating Transportation Impacts in CEQA:
            i. Residential projects: 15 percent below the existing VMT per capita
            ii. Office projects: 15 percent below the existing VMT per employee
            iii. Retail projects: no net increase in existing VMT
        b. The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

B. Projects must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Notably, these two compliance pathways are intended to be applied to land use development projects, which does not characterize the proposed project. The project's emissions would occur from construction-related activity. BAAQMD does not have a recommended numerical target for assessing the significance of construction emissions; however, the Sacramento Metropolitan Air Quality Management District (SMAQMD) recommends an 1,100 metric tons of carbon dioxide equivalent per year ($MTCO_2e$/year) bright-line threshold be applied to construction emissions. Therefore, in the absence of a construction-related threshold endorsed by BAAQMD, SMAQMD's 1,100 $MTCO_2e$/year has been applied to construction emissions for the proposed project.

3.8.2 Discussion

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less-than-significant impact. The project would not result in an increase in operational GHG emissions compared to existing conditions because it involves replacing an existing force main and installing stormwater improvements. The new force mains would require the same operational activities and less maintenance compared to existing conditions and no long-term emissions would be associated with the stormwater improvements. The project would also not require an increase in employees from existing conditions.

The project would generate GHGs during construction from using heavy-duty construction equipment and vehicle use for worker commutes. This would include the construction of two new force mains, appurtenant structures, and stormwater improvements. The project's construction-related GHG emissions were estimated using emission factors from the CalEEMod Version 2022.1 Appendix G for off-road construction equipment exhaust emission and CARB's EMFAC 2021 output for mobile source emissions, including worker commute, vendor deliveries, and truck hauling. A more detailed discussion of this model and the modeling is provided in Section 3.3, "Air Quality," and model outputs are included in Appendix B. Based on this modeling, project-related construction activity would generate a total of 1,558 $MTCO_2e$ over approximately 24 months. Table 3.8-1 summarizes the project's construction emissions by year (2026–2027).

Table 3.8-1 Summary of Greenhouse Gas Emissions during Project Construction

Year	$MTCO_2e$/year
2026	718
2027	840
SMAQMD Threshold	1,100
Exceeds?	No

Notes: $MTCO_2e$/year = metric tons of carbon dioxide equivalent per year; SMAQMD = Sacramento Metropolitan Air Quality Management District.

Source: Modeled by Ascent in 2024.

Table 3.8-1 shows that the project's construction emissions would not exceed SMAQMD's 1,100 $MTCO_2e$/year threshold. SMAQMD's thresholds were developed to align with the reduction targets of SB 32 (i.e., a 40 percent reduction from a 1990 statewide GHG inventory). As the project would be completed before 2030, this target comprises the most relevant GHG reduction target to compare the project's contribution of emissions. Because the project would not generate emissions exceeding 1,100 $MTCO_2e$/year during project construction, the project would not conflict with statewide GHG reduction goals or the 2022 Scoping Plan, which is considered the most applicable GHG reduction plan to the project in the absence of a local climate action plan. Therefore, this impact would be less than significant, and no mitigation is required.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

See the discussion under Impact 3.8.2a above.

3.9 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. Hazards and Hazardous Materials. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

3.9.1 Environmental Setting

The following databases were reviewed for the proposed project and surrounding area to identify potential hazardous contamination sites:

- California Department of Toxic Substances (DTSC) Hazardous Waste and Substances List (Cortese List),
- DTSC EnviroStor database, and
- State Water Resources Control Board (SWRCB) GeoTracker database.

The Cortese List indicated that the project alignment and alignment options are not located on any identified hazardous material sites (DTSC 2024a). The EnviroStor database identified no hazards or hazardous waste sites near

the project or alternative alignments (DTSC 2024b). The GeoTracker database identified the following hazardous sites within 0.25 mile of the project alignment and alignment options (SWRCB 2024):

- Seven closed Leaking Underground Storage Tank (LUST) cleanup sites:
  - Ken Hagemann Personal Garage at 730 A Broadway Street, Fairfield;
  - Union Food & Liquor at 400 Union Street, Fairfield;
  - Suisun City of Redevelopment at 209 Main Street, Suisun City;
  - Unknown at Unk Cedar, Suisun City;
  - Union Pacific Railroad at 301 Springs Street, Suisun City;
  - Sheldon Oil Company at 426 Main Street, Suisun City; and
  - Texaco at 522 Main Street, Suisun City.
- Two open Cleanup Program sites:
  - Sheldon Oil Co. Main Street at 505 Main Street, Suisun City; and
  - Sheldon Oil Co. at 526 School and 505 Main Streets, Suisun City.

Redcrest High School and Crystal Middle School are located within 0.25 mile of the project alignment and alignment options to the east of Suisun Slough. The project is not located within an airport land use plan or within 2 miles of a public or public use airport. The nearest airport is Travis Air Force Base that is approximately 5.3 miles to the northeast. The project area is not located within or near a High Fire Hazard Severity Zone (FHSZ) designated by California Department of Forestry and Fire Protection (CAL FIRE). The nearest High FHSZ is located approximately 4 miles from the project area west of Suisun Valley Road in the City of Fairfield (CAL FIRE 2024).

3.9.2 Discussion

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less-than-significant impact. The proposed project could result in a significant hazard to the public or the environment if the proposed project would include the routine transport, use, or disposal of hazardous materials. The routine use, transport, or disposal of hazardous materials is primarily associated with industrial uses that require such materials for operations or produce hazardous wastes as by-products of production application. The proposed project would be operated in lieu of the existing Suisun Force Main with two new parallel force mains to ensure service reliability. The proposed project does not propose any activities involving the significant use, routine transport, or disposal of hazardous substances. Construction activities would involve excavation and trenching, installation of new force mains and appurtenant infrastructure, and backfilling. Construction activities would also include the installation of stormwater improvements. Construction equipment and vehicles would use a minimal amount of hazardous materials. Hazardous materials present during project construction may include gasoline, diesel fuel, hydraulic oils, equipment coolants, and any generated wastes that may include these materials. Gasoline and diesel fuel would be stored in small quantities on-site during construction and fueling of some equipment and vehicles would be performed on-site. As discussed in Section 3.10, "Hydrology and Water Quality," below, a project-specific SWPPP would be prepared and implemented, which would include spill response and control measures. In addition, precautionary measures including adherence to state-mandated safety standards, including federal Occupational Safety and Health Administration (OSHA) regulations (29 Code of Federal Regulations 1910.120) and California OSHA regulations (8 California Code of Regulations Title 8, Section 5192) during construction would minimize effects associated with use of hazardous wastes and emergency response. Once constructed, the new force mains would be located underground and would not require the transport, use, or disposal of hazardous materials, and the stormwater improvements would provide a long-term benefit related to removal of Polychlorinated

biphenyls (PCBs) from stormwater in vicinity of the improvements. Given the minimal amount of hazardous materials used during construction and requirement of compliance with the spill control and response measures in the SWPPP, the risk to the public and environment from the routine transport, use, or disposal of hazardous materials would be less than significant, and no mitigation is required.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less-than-significant impact. As discussed under Impact 3.9.2a, a minimal amount of hazardous materials (e.g., gasoline, diesel fuel, hydraulic oils, and equipment coolants) would be used during construction. Once constructed, the proposed project would not involve the use of hazardous materials and would enhance removal of PCBs from stormwater. The proposed project would implement a project-specific SWPPP that would include spill response and control measures. Compliance with the spill control and response measures in the SWPPP would ensure potential impacts from spills would be less than significant, and no mitigation is required.

c) 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 impact. As noted above, Redcrest High School and Crystal Middle School are located within 0.25 mile of the project alignment and alignment options east of Suisun Slough. As discussed under Impacts 3.9.2a and b, the proposed project would comply with the spill control and response measures in the SWPPP. Temporary use of hazardous materials, including gasoline, diesel fuel, hydraulic oils, and equipment coolants, would be limited to the immediate construction area along the project alignment or alignment options and any and all spills would be contained immediately to prevent potential exposure. No construction would occur on or near the school sites. Therefore, the impact on schools would be less than significant, and no mitigation is required.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less-than-significant impact. A review of DTSC's Cortese List and EnviroStor databases indicated that the project alignment and alignment options are not located near any identified hazardous material sites (DTSC 2024a and 2024b). SWRCB's GeoTracker database identified seven LUST sites within 0.25 mile of project alignment and alignment options, but all seven sites have been closed and cleaned up (SWRCB 2024). The GeoTracker database also identified two Cleanup Program sites within 0.25 mile of the project alignment and alignment options to the east of Suisun Slough. The two Cleanup Program sites are open and require assessment and interim remedial action (SWRCB 2024). Project construction activities would be confined to the project alignment and alignment options and would not overlap with the two Cleanup Program sites to the east of Suisun Slough. No other active hazardous material sites were identified within the project area. Because implementation of the proposed project would not occur on the active hazardous material sites, impacts would be less than significant, and no mitigation is required.

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?

No impact. The project area is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The proposed project would have no impact associated with airport hazards, and no mitigation is required.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less-than-significant impact. The proposed project would construct two new parallel force mains in the City of Fairfield and City of Suisun City. Construction of the new force mains would occur within city streets. Work on city streets would require temporary lane closures and potentially temporary road closures depending on locations and coordination with City requirements. Alignment options 1, 3, and 4 may require more roadway closures than the project alignment. As discussed in Chapter 2, Section 2.4.4, "Construction," traffic control plans would be developed and approved by the City with jurisdiction over the roadway. Flagging, signage, and workers would be provided consistent with city requirements and lane closures would avoid peak travel periods to the extent possible. Implementation of traffic control plans would ensure that roadways would remain accessible to emergency vehicles during construction. Once constructed, the new force mains would be located underground and would not impair implementation of or physically interfere with an existing emergency responses plan or emergency evacuation plan. Therefore, the impact would be less than significant, and no mitigation is required.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

No impact. The project area is not located within or near a High FHSZ designated by CAL FIRE. The project area is in an urbanized area with low fire risks. The nearest High FHSZ is located approximately 4 miles from the project alignment and alignment options west of Suisun Valley Road in the City of Fairfield (CAL FIRE 2024). The proposed project would construct two new parallel force mains and would not construct structures for human occupancy that could increase wildfire risks. No impact would occur, and no mitigation is required.

3.10 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Hydrology and Water Quality. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
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 which would:				
i) Result in substantial on- or offsite erosion or siltation;	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒
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	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

3.10.1 Environmental Setting

The project area is under the jurisdiction of SFBRWQCB. The *Water Quality Control Plan* for the San Francisco Bay Basin (Basin Plan) is SFBRWQCB's master water quality control planning document (SFBRWQCB 2024).

The project area is located within the Suisun-Fairfield Valley groundwater basin. According to California Department of Water Resources' Basin Prioritization, the Suisun-Fairfield Valley groundwater basin has a low priority for sustainable groundwater management (DWR 2024). No groundwater management plan is prepared for this groundwater basin.

Portions of the project alignment and alignment options are located along Suisun Slough. In addition, as described in Section 3.4 above, there are seasonal wetlands, freshwater emergent wetlands, and drainage ditches within the project area. The project area is located on Federal Emergency Management Agency (FEMA) flood insurance rate map 06095C0456F. Portions of the project area are located within the 100-year floodplain (Zones AO and AE) (FEMA 2016). The project area is located in an inland area and is not located near a large, enclosed body of water.

3.10.2 Discussion

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less-than-significant impact. Project construction activities (e.g., excavation and trenching) would expose and disturb soil resulting in a potential increase in erosion and siltation in the vicinity of the project alignment and alignment options. Erosion and siltation from construction would have the potential to impact Suisun Slough resulting in adverse short-term impacts to water quality. Because the proposed project would result in more than 1 acre of ground disturbance, the proposed project must comply with and obtain coverage under the NPDES Construction General Permit. The NPDES Construction General Permit requires development and implementation of a project-specific SWPPP that includes BMPs for erosion and sediment control. Potential BMPs could include covering exposed soils, installing filter fabric to prevent erosion, using secondary containment to contain spills, and maintaining spill kits in high-risk areas. Implementation of the project-specific SWPPP and associated BMPs would ensure that the effects on water quality would be minimized. In addition, as discussed in Chapter 2, Section 2.5, "Project Approvals," the proposed project would be required to obtain permits and approvals from USACE, San Francisco Bay Conservation and Development Commission, SFBRWQCB, and CDFW. Permits and approvals from these regulatory agencies would require development and implementation of BMPs to avoid and minimize impacts to water quality. Therefore, compliance with existing regulation requirements would ensure that the proposed project would not violate water quality standards or waste discharge requirements. In addition, stormwater improvements proposed as part of the project are expected to reduce pollutants discharged from the urban environment into storm drains, local creeks, and Suisun Marsh over the long term. Impacts would be less than significant, and no mitigation is required.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less-than-significant impact. Construction of the proposed project could require dewatering in areas with high water tables, such as the portions of the project alignment and alignment options near Suisun Slough. Dewatering is expected to be limited in duration and would only affect the local, shallow aquifer. The proposed project would not include activities that would increase the amount of impervious surface area. Therefore, the proposed project would not interfere with the amount of potential groundwater recharge. In addition, the proposed project would not increase demand for groundwater and the stormwater improvements are expected to improve groundwater recharge in the area of the improvements. The proposed project would not deplete groundwater supplies and would not interfere with groundwater recharge by drilling groundwater wells. The impact would be less than significant, and no mitigation is required.

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 which would:

i) Result in substantial on- or offsite erosion or siltation;

Less-than-significant impact. The proposed project would not alter the course of a stream or river and would not result in additional impervious surfaces. However, construction activities (e.g., excavation and trenching) would result in ground disturbance and could lead to erosion and siltation on-site or off-site. As discussed under Impact 3.10.2a, a project-specific SWPPP and associated BMPs would be implemented for erosion and sedimentation control. The proposed project would not alter drainage patterns and would not result in substantial erosion and siltation with implementation of SWPPP and associated BMPs. In addition, stormwater improvements proposed as part of the project are expected to reduce pollutants discharged from the urban environment into storm drains, local creeks, and Suisun Marsh in the long-term. The impact would be less than significant, and no mitigation is required.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

No impact. Implementation of the proposed project would require replacement of existing pavement once construction is complete but would not result in the addition of new impervious surfaces. The new force mains would be located underground, and the stormwater improvements would improve drainage along Ohio Street where the bioretention area is installed. The drainage patterns along the project alignment and alignment options would be restored consistent with existing conditions or enhanced. Therefore, the proposed project would not alter drainage patterns and would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding. No impact would occur, and no mitigation is required.

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

Less-than-significant impact. The proposed project neither proposes the alteration of a stream or river, nor does it propose an increase in impervious surfaces. The existing Suisun Force Main is nearing the end of its expected service life and approaches its hydraulic capacity during storm events. The proposed project would construct dual force mains that would allow for redundancy during operation. As a result, the proposed project would increase the existing stormwater conveyance infrastructure capacity to accommodate runoff during storm events. The potential for construction activities to impact water quality, including from polluted runoff, is analyzed under Impact 3.10.2a. In addition, stormwater improvements proposed as part of the project are expected to reduce pollutants discharged from stormwater in the long-term. The impact would be less than significant, and no mitigation is required.

iv) Impede or redirect flood flows?

No impact. The project area is located on FEMA flood insurance rate map 06095C0456F within a 100-year floodplain (FEMA 2016). The proposed project would be operated in lieu of an aging force main that may be susceptible to further decline and potential failure during flood events. The new force mains would be located underground and would not impede or redirect flood flows and the stormwater improvements would improve drainage. No impact would occur, and no mitigation is required.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less-than-significant impact. Tsunamis are seismic sea waves generated by underwater earthquakes, landslides, or volcanic activity. The proposed project is not located near a coastal area that is subject to tsunami. Seiches are waves generated in a large, enclosed body of water. Based on the inland location, the project is not within an area subject to tsunamis. Although portions of the project area are near Suisun Slough, the new force mains would be underground and the stormwater improvements are not expected to be damaged by a seiche.

As discussed under Impact 3.10.2c.iv, portions of the project area would be located within the 100-year floodplain. Construction activities would occur during dry season outside of the flood period. Once constructed, the project alignment would be located underground or would improve drainage and would not risk the release of pollutants due to inundation. The impact would be less than significant, and no mitigation is required.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less-than-significant impact. The Basin Plan identifies beneficial water uses, water quality objectives to protect the designated beneficial water uses, and strategies and time schedules to achieve water quality objectives. Water quality objectives for surface waters encompass features such as bacterial levels, sediment, pH, and temperatures. Strategies

include Total Maximum Daily Loads required by the Clean Water Act for waterbodies where water quality standards are not currently met.

A project could interfere with the Basin Plan by degrading water quality in a way that water quality objectives or strategies are not met, and beneficial uses are adversely affected or not achieved. The Basin Plan identifies beneficial uses for Suisun Slough. Beneficial uses for Suisun Slough include commercial, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, warm freshwater habitat, wildlife habitat, water contact recreation, noncontact water recreation, and navigation (SFBRWQCB 2010). The potential for construction activities to result in erosion and siltation is analyzed under Impact 3.10.2a. Release of sediment and hazardous materials during construction activities could conflict with the beneficial uses identified for Suisun Slough in the Basin Plan. However, implementation of the erosion control measures required by and identified in the project-specific SWPPP would minimize temporary impacts. Once constructed, the project would be located underground and would not result in erosion, siltation, or increased pollution in stormwater runoff as discussed under Impact 3.10.2c. In addition, stormwater improvements proposed as part of the project are expected to reduce pollutants discharged from the urban environment into storm drains, local creeks, and Suisun Marsh over the long term, which would reduce the potential for conflicts with the Basin Plan. Potential conflicts with the Basin Plan would be less than significant, and no mitigation is required.

The project area is located within the Suisun-Fairfield Valley groundwater basin, which has a low priority for sustainable groundwater management. No groundwater management plan is prepared for this groundwater basin. No impact to groundwater management plan would occur, and no mitigation is required.

3.11 LAND USE AND PLANNING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Land Use and Planning. Would the project:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Cause a significant 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?	☐	☐	☐	☒

3.11.1 Environmental Setting

The project area is within the cities of Fairfield and Suisun City. The project area includes the Suisun Pump Station, Central Pump Station, associated roadways, residences, vacant land, SR 12, Suisun City public services department facilities, Union Pacific Railroad, PG&E substation, and a commercial shopping center, Suisun Slough, Sheldon Plaza, Mike Day Memorial Park, and commercial facilities.

The City of Fairfield's General Plan designates and zones the project area as Commercial Service and Residential Medium-Downtown. The City of Suisun City Waterfront District Specific Plan designates the project area as Residential Medium Density, Public Facilities, Commercial-Office-Residential, Downtown Mixed Use, and Main Street Mixed Use. These land designations are primarily for medium density residential, public/quasi-public, recreational, retail, service, business, dining, and entertainment uses, but also allows for uses that are similar in nature, function, and operations to the permitted uses (City of Fairfield 2023, City of Suisun City 2016).

3.11.2 Discussion

a) Physically divide an established community?

Less-than-significant impact. The project alignment and alignment options run through the southeastern portion of the City of Fairfield and the northwestern portion of the City of Suisun City; however, the new force mains would be underground once constructed and the stormwater improvements would enhance the vegetation in an already developed area. Construction activities would result in open cut trench construction methods, trenchless construction methods, and temporary lane closures and road closures. Operation and maintenance of the new force mains would be similar to existing conditions. While construction activities may result in some minor separation of established communities through potential road closures, closures would be temporary and would not permanently divide a community. Additionally, potential lane and road closures would be in coordination with city requirements, with traffic control plans being developed and approved by the city with jurisdiction of the roadway. Potential temporary impacts from the associated construction methods would not result in a permanent physical divide of an established community. Thus, impacts would be less than significant, and no mitigation is required.

b) Cause a significant 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?

No impact. The proposed project construct two new force mains that would be entirely underground once construction is complete and minor stormwater improvements. The land use designation/zoning for the project area is Commercial Service and Residential Medium-Downtown within the boundaries of the City of Fairfield, and Residential Medium Density, Public Facilities, Commercial-Office-Residential, Downtown Mixed Use, and Main Street Mixed Use within the boundaries of the City of Suisun City (City of Fairfield 2023, City of Suisun City 2016). The project does not propose any changes to land use. All construction methods would be applicable with zoning requirements of the City of Fairfield as well as the City of Suisun City Waterfront District Specific Plan. Traffic control plans would be required to be developed and approved by the city with jurisdiction over the roadway prior to construction activities on city streets. Additionally, all construction activities would be required to comply with city noise ordinances. All work within 100 feet of the Suisun Slough shoreline would also require a Bay Conservation Delta Commission permit prior to open cut (trench) construction activities. Thus, no impact would occur, and no mitigation is required.

3.12 MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

3.12.1 Environmental Setting

According to the City of Suisun City 2035 General Plan Background Report, the portion of the project area in the Suisun City is located in a Mineral Resource Zone Category 1 (MRZ-1) (City of Suisun City n.d.). MRZ-1 zones are areas with adequate geologic information indicating that no significant mineral deposits are present. The City of Fairfield General Plan identified two inactive quarries in the city, Nelson Hill and Cement Hill, which were used for construction aggregate. Abandoned limestone quarries are also located on the western and southern slopes of Cement Hill (City of Fairfield 2013). Nelson Hill and Cement Hill are located approximately 4 miles northeast and southwest of the project area, respectively. There are no mineral resources identified within the portion of the project area in the City of Fairfield.

3.12.2 Discussion

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?

No impact. The proposed project is not located in an area that is identified with a significant source of mineral resources. Specifically, the portion of the project area within the Suisun City is located within MRZ-1, which indicates no significant mineral deposits are present. The portion of the project area within the City of Fairfield is located approximately 4 miles from inactive quarries, Nelson Hill and Cement Hill. The proposed project would not result in the loss of availability of known mineral resources. No impact would occur, and no mitigation is required.

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?

No impact. As discussed in Impact 3.12.2a, the proposed project is not located in an area that contains significant mineral deposits. The proposed project would not result in the loss of availability of a known mineral resource. Therefore, no impact would occur, and no mitigation is required.

3.13 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. Noise. Would the project result in:				
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, or a substantial temporary or permanent increase in noise levels above existing ambient levels that could result in an adverse effect on humans?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.13.1 Environmental Setting

Existing noise-sensitive receptors include single-family and multi-family residences adjacent to Illinois Street, Madison Street, Jackson Street, Webster Street, Jefferson Street, Ohio Street, Bay Street, Almond Street, Harbor Park Drive, Catamaran Way, Civic Center Boulevard, Lotz Way, and Driftwood Drive within the cities of Fairfield and Suisun City. These residences are considered to be noise-sensitive because they are land use types where noise exposure could result in health-related risks to individuals and places where a quiet setting is an essential element for their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to interior and exterior noise levels. Residential land uses are also considered sensitive to noticeable levels of ground vibration. The existing noise environment in the project area is primarily influenced by vehicles traveling on the roadway network, including SR 12 and trains traveling along the Union Pacific Railroad tracks. The exposure of nearby sensitive receptors to short-term (i.e., construction-related) noise and vibration impacts are based on reference noise levels for typical construction equipment and attenuation calculations.

The cities of Fairfield and Suisun City have established noise standards to protect citizens from potential hearing damage and other adverse physiological and social effects from noise exposure. Chapter 25 Zoning Ordinance Article X, Noise Ordinance of the City of Fairfield Municipal Code (Section 25.1404, Specific Prohibitions) prohibits construction activities between 10:00 p.m. and 7:00 a.m. except by written permission of the Director of Public Works.

Section 8.12.108 of the City of Suisun City Code of Ordinances establishes Suisun City's noise regulations. Chapter 15.04, Permits – Uniform Codes, (Section 15.04.075, Construction Work Hours) states that no construction equipment shall be operated, nor any outdoor construction, non-residential projects or repair work shall be permitted within 600 feet from any occupied residence except during the hours of 7:00 a.m. to 8:00 p.m., Monday through Friday, and 8:00 a.m. to 8:00 p.m., on Saturday and Sunday. Additionally, Section 15.12.320, Dust Control Measures, establishes that construction machinery for earthwork, trenching, concrete, or paving, is restricted to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. and 5:00 p.m. on Saturdays. Suisun City also establishes the following exemption

applicable to the project in Section 8.12.108: 2. Sound or noise associated with the construction or maintenance of city facilities and other activities by any city department or its contractors, utilities, waste hauler, or any other public entity.

The cities of Fairfield and Suisun City do not have established vibration or construction noise standards. Therefore, the following guidance from the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual was used for the analysis herein. The FTA Transit Noise and Vibration Impact Assessment Manual guides engineers, planners, and consultants in assessing noise and vibration from project construction, operation, and maintenance. To address the human response to ground vibration, the FTA has established guidelines for maximum-acceptable vibration criteria for different types of land uses, shown in Table 3.13-1. In addition, FTA has established construction vibration damage criteria, shown in Table 3.13-2.

Table 3.13-1 Ground Vibration Impact Criteria for Human Response

Land Use Category	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime uses.	75 VdB	78 VdB	83 VdB

Notes: VdB: vibration decibels referenced to 1 microinch per second and based on the root mean square velocity amplitude

[1] Frequent Events" is defined as more than 70 vibration events of the same source per day.

[2] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

[3] "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day

Source: FTA 2018.

Table 3.13-2 Construction Damage Vibration Criteria

Land Use Category	Peak Particle Velocity (inches per second)
Reinforced-concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2018.

In addition to vibration criteria, FTA has established construction noise criteria based on the land use type affected by noise and the time of day the noise would occur. The FTA residential noise criteria used in this analysis are 90 A-weighted decibels (dBA) energy-equivalent noise level (L_{eq}) for daytime and 80 dBA L_{eq} for nighttime and 100 dBA L_{eq} for nonresidential uses.

3.13.2 Discussion

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, or a substantial temporary or permanent increase in noise levels above existing ambient levels that could result in an adverse effect on humans?

Less-than-significant impact with mitigation incorporated. This discussion includes an analysis of short-term construction and long-term operational noise.

Construction

To assess potential temporary construction-related noise impacts, sensitive receptors, and their relative exposure were identified. Project construction is anticipated to begin in summer 2026 and is expected to be completed in

approximately 24 months. To comply with the City of Fairfield and City of Suisun City noise ordinances, construction would generally be performed between 7:00 am and 5:00 pm, Monday through Friday, with the potential to occur periodically on Saturdays. In addition, limited nighttime work may be required.

As detailed above, the cities of Fairfield and Suisun City have not adopted construction-specific noise standards. Thus, the FTA construction noise standards assess construction noise impacts. FTA has a daytime construction noise standard of 90 dBA L_{eq} for residential uses and 100 dBA L_{eq} for commercial/industrial uses (FTA 2018: 179). For nighttime construction, 45 dBA is generally considered to be the level under which sleep disturbance would typically not occur (FICAN 1997), and as such, it is considered the standard for any nighttime construction that is deemed necessary and which receives an exemption from the cities' noise ordinances for such work.

Project-generated construction source noise levels were determined based on methodologies, reference emission levels, and usage factors from the FTA's Guide on Transit Noise and Vibration Impact Assessment methodology (FTA 2018) and Federal Highway Administration's Roadway Construction Noise Model User's Guide (FHWA 2006). Reference noise levels for specific equipment and activity types are well documented, and the usage thereof is common practice in the field of acoustics.

Construction equipment with substantially higher noise-generation characteristics, such as pile drivers, rock drills, and blasting equipment, would not be used to construct any project phase. Construction is a temporary activity, and noise from construction ceases once construction is complete. Construction-generated noise levels would fluctuate depending on the type, number, and duration of equipment used. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the ambient noise environment at nearby receptors.

The typical maximum noise levels (i.e., maximum noise level [L_{max}]) for various construction equipment at 50 feet away are presented in Table 3.13-3. However, construction equipment operates in alternating full and low power cycles, producing average noise levels less than the maximum noise level. The average sound level of construction activity also depends on the time the equipment operates and the intensity of construction activities.

As shown in Table 3.13-3, the maximum noise levels at 50 feet for typical construction equipment could result in levels up to 85 dBA. Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dBA for each doubling of distance from a point source.

Modeling for the force main construction assumed the simultaneous operation of three pieces of heavy equipment for trenching (i.e., an excavator, a front-end loader, and a flatbed truck) along the project alignment or alignment options. As this work is linear, elevated noise levels would only occur temporarily in the location where construction occurs before moving along the roadway (i.e., less than 30 days). Based on reference noise levels and accounting for typical usage factors of individual pieces of equipment, off-site construction-related activities could generate a combined hourly average noise level of approximately 79.6 dBA L_{eq} and 83.6 dBA L_{max} at 50 feet. Detailed inputs and parameters for the estimated construction noise exposure levels are provided in Appendix C.

Table 3.13-3 Typical Noise Levels from Construction Equipment

Equipment Type	Typical Noise Level (L_{max} dBA) at 50 feet
Backhoe	80
Concrete Mixer	85
Compactor	80
Crane/Lift	85
Compressor (Air)	80
Dozer	85
Dump Truck	84
Excavator	85
Flat Bed Truck	84
Front End Loader	80
Generator	70
Grader	85
Paver	85
Roller	85
Pickup Trucks	54

Notes: L_{max}=maximum noise level.

a) Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications.

b) Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment.

Source: FTA 2018:176.

Project construction would exceed FTA's construction noise standard of 90 dBA L_{eq} for residential uses within 15 feet of construction and 100 dBA L_{eq} for commercial/industrial uses within 5 feet of construction. No nonresidential uses would be located within 5 feet of where trenching would occur. Therefore, the project would not exceed FTA's standard for commercial/industrial uses (i.e., 100 dBA L_{eq}). Additionally, construction would not occur within 15 feet of residential uses. Within the City of Suisun City, the force main alignment is approximately 60 feet or further from the residential uses east of Civic Center Boulevard. Within the City of Fairfield, the distance between the roadway centerline and the property line of the residential uses is approximately 45 feet along Ohio Street and 35 to 40 feet along Madison Street. Therefore, construction activities would not exceed FTA's daytime construction noise standard of 90 dBA L_{eq} for residential uses. Additionally, the aforementioned nighttime construction noise standard of 45 dBA at residential uses would not be exceeded between the hours of 10:00 p.m. to 7:00 a.m. because project construction would generally not occur within nighttime hours. Limited nighttime construction may be required within the City of Suisun City if Alignment Option 3 is selected. In the event that the City of Suisun City requests construction to occur during nighttime hours, noise levels associated with construction may exceed 45 dBA at certain residences if they are located within 250 feet based on construction noise modeling conducted for the project and provided in Appendix C.

The project involves trenchless construction methods using microtunneling at the crossing of the Union Pacific Railroad tracks. As detailed in Chapter 2, "Project Description," microtunneling would be performed using a crane and an excavator to construct launching and receiving shafts and remove soil from within the shafts. Then, a microtunnel boring machine would be used to bore horizontally. Noise levels from microtunneling would be similar to that of trenching. See Appendix C for modeling. Sensitive receptors would be located further from microtunneling activity than from trenching along the proposed force main alignment. Therefore, construction activities associated with microtunneling would not result in substantial noise increases at nearby noise-sensitive receptors.

The project's daytime construction noise would result in perceptible increases in noise (i.e., 10 dBA or more above existing noise levels). However, due to the temporary and transient nature of construction activities, elevated noise

levels would not occur for extended periods of time at any one location. As detailed in Chapter 2, "Project Description," construction would proceed at an average rate of 30 linear feet per day; therefore, construction noise impacts for individual receptors along the project alignment or alignment options would be short-term as construction activities move linearly. While construction would primarily occur during the less-sensitive daytime hours when other existing noise sources are also present (e.g., roadway noise, train travel, and other nearby construction), the project's construction noise alone would not result in substantial new noise sources during daytime hours that would exceed the applicable maximum noise level thresholds or result in noise level increases that could result in adverse health effects (i.e., sleep interruption, prolonged excessive noise leading to annoyance) to nearby receptors. If nighttime work is required for construction within 600 feet of residences, construction could result in a substantial new temporary noise source that could result in waking of sleeping residents.

Therefore, if nighttime construction is required and construction is considered exempt under Section 8.12.108: 2, this impact would be potentially significant.

Operational

As detailed in Chapter 2, "Project Description," operations and maintenance of the new force mains would be similar to existing conditions. Maintenance activities would include inspections, exercising of valves, and cleaning the pipeline. Maintenance related to the stormwater improvements would be minimal and primarily consist of vegetation management. Because maintenance activities associated with the project would remain similar to existing conditions, the number of employee trips would be expected to either stay the same or change minimally.

It is widely accepted that people can begin to detect sound level increases of 3 dBA in typical noisy environments. A 5 dBA increase is generally perceived as a distinctly noticeable increase, and a 10 dBA increase is generally perceived as a doubling of loudness (Caltrans 2013: 2-10). Therefore, a doubling of sound energy (e.g., doubling the traffic volume on a highway) that would result in a 3 dBA increase in sound would generally be perceived as barely detectable. A doubling of existing traffic on any roadway would not occur for the above reasons. Therefore, project-generated traffic-related noise increase would not be perceptible (i.e., less than 3 dBA), and no significant impact is anticipated.

For stationary noise (e.g., equipment noise), the project's operations and maintenance activities are anticipated to remain similar to existing conditions. The project proposes the operation of two parallel force mains between the Suisun Pump Station and Central Pump Station to operate in lieu of the aging portions of the existing pipeline. Therefore, the project would not substantially increase operational stationary noise above existing ambient levels or as compared to existing conditions. Impacts would be less than significant, and no mitigation is required.

Mitigation Measure 3.13-1: Implement Noise Reduction Measures

Prior to initiation of any nighttime construction work, FSSD will apply for and obtain an exception to the permitted work hours, pursuant to Suisun City Code Section 15.04.075. In addition, FSSD or its contractor shall not perform any nighttime construction activity within 250 feet of an existing residential structure.

Significance after Mitigation

Implementation of Mitigation Measure 3.13-1 would reduce nighttime noise impacts to a less-than-significant level by requiring noise levels at the nearest residence to be maintained under the threshold level that could cause sleep disturbance.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less-than-significant impact with mitigation incorporated. Construction activities that may expose people to excessive vibration, resulting in sleep disturbance or prolonged disruption to daily activities and work, are more likely to occur during extended construction schedules that involve impact equipment (e.g., pile drivers, jackhammers), blasting, or large haul trucks. Based on FTA guidance, transient vibrations, such as construction activity with a 0.2 inches per second (in/sec) peak particle velocity (PPV), may be characterized as causing structural damage to non-engineered timber and masonry buildings, 0.3 PPV in/sec for engineered concrete masonry, and 0.5 PPV in/sec for reinforced

concrete, steel, or timber structures. In addition, peak vibration levels (VdB) established by the FTA recommend a level of 80 VdB to evaluate disturbance to sensitive land uses where people sleep.

Based on the proposed construction activity and types of equipment that would be used, the heaviest piece of construction equipment that would generate the highest levels of vibration would be a vibratory compactor, similar to that of a vibratory roller. A vibratory roller operated within approximately 26 feet of an existing building or structure could expose that structure to levels of ground vibration that exceed FTA recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage. Also, a vibratory roller operated within 73 feet of a building could expose the building occupants to ground vibration levels that exceed the FTA maximum-acceptable vibration standard of 80 VdB with respect to human annoyance for residential uses. Vibration modeling calculations are provided in Appendix C. Construction would not occur within 26 feet of a structure; therefore, there would be no exceedance of FTA's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage. Although it is anticipated that project construction would occur within 73 feet of residential units, project construction would primarily take place during the day in compliance with Section 25.1404 (City of Fairfield) and Sections 15.04.075 and 15.12.320 (City of Suisun City) code of ordinances which limit construction hours. However, limited nighttime construction may be required within the City of Suisun City. As noted above under Impact 3.13.2a and if nighttime construction is required, the project would have a potentially significant impact on the exposure of persons to excessive groundborne vibrations or groundborne noise levels.

Mitigation Measure 3.13-1: Implement Noise Reduction Measures

Implement Mitigation Measure 3.13-1 above.

Significance after Mitigation

Implementation of Mitigation Measure 3.13-1 would reduce nighttime vibration impacts to a less-than-significant level by requiring vibration levels at the nearest residence to be maintained under the threshold level that could cause sleep disturbance.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No impact. The project is not located in the vicinity of an airport as the nearest airport, Nut Tree Airport, is located approximately 9 miles north of the project area. Therefore, the project would not expose people residing or working in the project area to excessive noise levels and there would be no impact related to airport noise. No mitigation is required.

3.14 POPULATION AND HOUSING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Population and Housing. 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)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.14.1 Environmental Setting

The project area is located in the cities of Fairfield and Suisun City. As of January 2024, the population in the City of Fairfield and City of Suisun City were estimated to be 120,339 and 28,840, respectively (DOF 2024). No housing units are located within the project alignment or any of the alignment options; however, residences are located along portions of the project alignment and all alignment options.

3.14.2 Discussion

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)?

Less-than-significant impact. The purpose of the proposed project is to construct two new parallel force mains to operate in lieu of the existing Suisun Force Main to ensure service reliability and provide a fully redundant connection between the two pump stations. The proposed project would install dual force mains and the appurtenant infrastructure necessary for operation and maintenance of the force mains. The project would also install stormwater improvements to reduce pollutants in stormwater. The project does not propose the construction of new housing or commercial businesses that would directly induce population growth in the area. The proposed project would not extend roadways or other infrastructure into new areas that could lead to indirect growth. In addition, although the project would increase pipeline capacity, the current force main approaches its hydraulic capacity during storm events. Therefore, this additional capacity would be adequate to meet current and projected flow demands, as well as peak wet weather events, but would not support unplanned growth The capacity of the system would also be limited by the capacity of the pump stations, which are not being expanded. This impact would be less than significant, and no mitigation is required.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No impact. No housing units are located within the project alignment and alignment options; however, residences are located along portions of the project alignment and alignment options. The proposed project does not propose removal of housing or business. Implementation of the proposed project would not displace people or housing. No impact would occur, and no mitigation is required.

3.15 PUBLIC SERVICES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

3.15.1 Environmental Setting

FIRE PROTECTION

The Fairfield Fire Department (FFD) provides fire protection and emergency medical services within Fairfield's city limits, as well as for over 900 square miles of surrounding Solano County. FFD provides fire protection services with five strategically located stations covering all major portions of the city: Stations 35, 37, 39, 40, and 41. In addition to these stations, FFD uses Station 38, as a training and vehicle maintenance facility. The project area within the City of Fairfield is located within the service area of Station 37 at 12000 Kentucky Street (City of Fairfield 2024a).

The Suisun City Fire Department (SCFD) provides fire protection services within the incorporated area of Suisun City. SCFD has one fire station located at 621 Pintail Drive (City of Suisun City 2024a).

POLICE PROTECTION

Police services in the City of Fairfield are provided by the Fairfield Police Department (FPD). The FPD is headquartered at 1000 Webster Street. (City of Fairfield 2024b). Police protection services within the City of Suisun City are provided by the Suisun City Police Department. The police station is located at 701 Civic Center Boulevard (City of Suisun City 2024b).

SCHOOLS

School services in the City of Fairfield and the City of Suisun City are provided by the Fairfield-Suisun Unified School District (FSUSD) and the Travis Unified School District (TUSD). There are 35 schools in the FSUSD consisting of five high schools, an Early College High School, five middle schools, 20 elementary schools, a preschool, and several alternative schools (FSUSD 2024). TUSD includes five elementary schools, a middle school, a comprehensive high school, an alternative high school, and a community day school (TUSD 2024). Redcrest High School and Crystal Middle School are the schools nearest to the project alignment and alignment options.

PARKS

The City of Fairfield currently contains 154.2 acres of neighborhood parks and 143 acres of community parks. Rockville Hills Regional Park is the only regional park in Fairfield (City of Fairfield 2024c). The Suisun City Recreation and Community Services Department contains 47.7 acres of neighborhood parks and 48 acres of community parks. Alignment Option 2 would go through a portion of Mike Day Memorial Park in the City of Suisun City (see Figure 2-2). No regional parks are in the project area.

LIBRARIES

There are four libraries within the City of Fairfield: Fairfield Civic Center Library, Fairfield Cordelia Library, Law Library, and Mitchell Memorial Library. One library, Suisun City Library, is located within the City of Suisun City (City of Fairfield 2024c, Solano County Library 2024). The Law Library is the closest library to the project alignment and alignment options, approximately 500 feet to the north.

3.15.2 Discussion

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:

Fire protection?

No impact. Fire protection services in the project area are provided by FFD and SCFD. Implementation of the proposed project would construct two new parallel force mains to ensure service reliability and stormwater improvements. The proposed project would not create a new public safety or fire hazard. The proposed project would not induce population growth that would create additional demand for fire protection services or would require provision of new fire protection facilities. No impact would occur, and no mitigation is required.

Police protection?

No impact. Police protection services in the project area are provided by FPD and Suisun City Police Department. As discussed above, implementation of the proposed project would not induce population growth that could lead to any incremental or cumulative increase in demand for police protection services. Implementation of the proposed project would not require construction or alteration of police protection facilities. No impact would occur, and no mitigation is required.

Schools?

No impact. Implementation of the proposed project would construct two new parallel force mains to ensure service reliability and stormwater improvements. The proposed project does not include residential uses that would increase the use of existing school facilities or require the construction of new school facilities. No impact would occur, and no mitigation is required.

Parks?

Less-than-significant impact. The proposed project does not propose changes to existing park facilities and does not include residential uses that would indirectly increase the use of existing park facilities or increase the demand for construction of new park facilities. If construction of Alignment Option 2 that runs through Mike Day Memorial Park is selected, there would be temporary impacts to the availability of park services/facilities in the vicinity of the active construction area. However, all impacts would be temporary and any areas disturbed would be returned to pre-project conditions. In addition, the park would continue to remain open and accessible to visitors during construction. Therefore, this impact would be less than significant, and no mitigation is required.

Other public facilities?

No impact. The project would construct two new parallel force mains and stormwater improvements and does not include residential uses that would indirectly increase the use of public facilities, such as libraires. No impact would occur, and no mitigation is required.

3.16 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.16.1 Environmental Setting

As described in Section 3.15, "Public Services," both the City of Fairfield and the City of Suisun City operate neighborhood and community parks near the project alignment and alignment options. The closest recreation areas to the project alignment and alignment options are the Suisun Waterfront and Mike Day Memorial Park (see Figure 2-2). No regional parks are located in the project area. Rush Ranch Open Space is the closest regional open space to the project area, approximately 2.5 miles to the south. In addition, as described in Section 3.17, "Transportation," below there are Class I and Class III bikeways along portions of the project and alignment options. Potential impacts to bikeways are described in Section 3.17, "Transportation."

3.16.2 Discussion

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less-than-significant impact. The proposed project would construct two new parallel force mains to ensure service reliability and stormwater improvements to reduce pollutants. The proposed project would not induce population growth that would create additional demand for local or regional parks or other recreational facilities. If selected, construction of Alignment Option 2 could have an impact on Mike Day Memorial Park; however, all impacts would be temporary and any areas disturbed during construction would be returned to the pre-project condition or include enhanced natural vegetation. The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated and all construction-related impacts would be temporary. This impact would be less than significant, and no mitigation is required.

b) 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 proposed project would construct two new parallel force mains to ensure service reliability and stormwater improvements to reduce pollutants. The proposed project does not include recreational facilities. The proposed project would not induce population growth that would require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. No impact would occur, and no mitigation is required.

3.17 TRANSPORTATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Transportation. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

3.17.1 Environmental Setting

ROADWAY NETWORK

The following roadways provide access to the proposed project:

- **SR 12** is an east-west state highway that extends from SR 116 in Sonoma County to SR 49 in Calaveras County. SR 12 is a four-lane expressway between its junction with Interstate 80 and Walters Road. SR 12 is managed by Caltrans.
- **Civic Center Boulevard** is a two-lane roadway with turn pockets and center median islands that extends southeast between Lotz Way and terminates in a cul-de-sac at its southern end. Sidewalks are present along both sides of Civic Center Boulevard between Lotz Way and Harbor Park Drive. There are no bicycle facilities along Civic Center Boulevard.
- **Main Street** is a two-lane roadway that provides access to SR 12 and terminates in a cul-de-sac at its southern end. Sidewalks are present along both sides of the roadway between the cul-de-sac and Lotz Way. The Central County Bikeway Class I multi-use path begins on Main Street just north of its intersection with Railroad Avenue.
- **Ohio Street** is a two-lane roadway with turn pockets that extends west between Union Avenue and Pennsylvania Avenue. Sidewalks and Class III bicycle facilities are on both sides of the roadway.
- **Madison Street** is a north-south two-lane roadway that extends north between Illinois Street and Kentucky Street. There are no bicycle facilities along the roadway, but sidewalks are present along both sides of Madison Street.
- **Illinois Street** is a two-lane roadway that extends east from Pennsylvania Avenue and terminates in a cul-de-sac. There are no bicycle facilities along the roadway but there are sidewalks along segments of both sides of Illinois Street.

BICYCLE AND PEDESTRIAN NETWORK

The bicycle network serving the City of Fairfield and Suisun City consists of the following bicycle facility classifications (STA 2020a):

- **Class I Shared-Use Paths:** Class I bicycle facilities provide robust separation from motor vehicles and are often located within their own rights-of-way. Interactions between bicyclists and vehicles are limited to roadway crossings.
- **Class II On-Street Bicycle Lanes:** Class II on-street bicycle lanes are striped adjacent to vehicle travel lanes, delineated either by a solid white line or by a larger hatched buffer space.
- **Class III Bicycle Routes:** Class III on-street bicycle routes are signed routes where people bicycling share a travel lane or shoulder with people driving. Class III bicycle routes typically include wayfinding signage for bicyclists as well as additional signage to increase driver awareness of the presence of bicyclists.
- **Class IV Separated Bicycle Lanes:** Class IV separated bicycle lanes are located on-street adjacent to vehicular traffic similar to Class II bicycle lanes. However, Class IV bicycle lanes provide robust physical separation between bicyclists and motor vehicles including vertical separation (e.g., parked vehicles, planters, bollards) and horizontal separation (e.g., landscaping strips, concrete curbs, parking stops). Class IV bicycle facilities can be implemented as one-way facilities on both sides of the roadway or as a two-way facility along one side of the roadway.

As of 2020, there were approximately 250 lane miles of designated bicycle facilities across Solano County including 68 miles of Class I shared-use paths, 137 miles of Class II bicycle lanes, and 26 miles of Class III bicycle routes (STA 2020a: 22). As of 2020, the Suisun City active transportation network included 134 miles of sidewalks and 14 miles of designated bicycle facilities (STA 2020b: 4), and the City of Fairfield active transportation network included 564 miles of sidewalk infrastructure and approximately 43 miles of designated bicycle facilities (STA 2020c: 4).

RAILWAY AND PUBLIC TRANSIT SYSTEM

Several operators provide transit services in the Cities of Fairfield and Suisun City. Delta Breeze provides deviated fixed-route bus service between the cities of Rio Vista, Suisun, and Fairfield. On a deviated fixed-route bus service, passengers call to make a reservation, and a bus arrives within a 30-minute window of when service was requested. Delta Breeze operates Route 50, which runs along SR 12 in the project area. The Delta Breeze transit operates Monday through Friday between 5:00 a.m. and 7:30 p.m. and does not operate on weekends or major holidays. The closest bus stop to the project area serves Route 50 and is located near the intersection of Main Street and Lotz Way adjacent to the project alignment.

Fairfield and Suisun Transit (FAST) operates fixed-route bus and on-demand micro-transit services in the Cities of Fairfield and Suisun City. The closest FAST bus stop serves Route 1 and is located near the intersection of Texas Street and Clay Street, approximately 0.25 mile north of the project area.

Solano County Transit operates fixed-route local and express bus and ADA paratransit services across south Solano County. The Solano County Transit Red Line and Green Line buses offer service between San Francisco and the Suisun-Fairfield Amtrak station, located near the project area (Solano County Transit 2024). In addition to public transit services offered by Delta Breeze, FAST, and Solano County Transit, the Union Pacific Railroad is located adjacent to the project area. The Amtrak Capital Corridor route operates on this railway between the City of San José and the City of Auburn. The Suisun-Fairfield stop is located on Railroad Avenue, approximately 100 feet west of the project alignment and alignment options. Solano Transit Authority is undertaking a long-term planning process to renovate the Suisun City Train Depot into a transit hub.

3.17.2 Discussion

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less-than-significant impact. The proposed project is not a land use development project that would result in increased demand for pedestrian, bicycle, or transit facilities, as there would be no operational activity associated with the proposed project that would generate such trips. Construction of the proposed project would require temporary lane closures along public roadways and multi-use paths (e.g., Class I multi-use path within Mike Day Park); and thus, could temporarily disrupt access to existing bus stops (e.g., along Main Street), public sidewalks, and/or bicycle/pedestrian paths. FSSD has been in coordination with Solano Transportation Authority to avoid potential construction impacts with the Authority's ongoing plan to renovate the Suisun City Train Depot into a transit hub. Alignment Options 1, 3, and 4 would require more roadway closures than the project alignment. However, all such closures would be short-term and no permanent changes to existing pedestrian, bicycle, transit, or roadway facilities are anticipated. Additionally, FSSD would adhere to encroachment permit conditions including requirements for traffic control plans that minimize disruptions to the circulation network and provide for the efficient movement of all roadway users. As detailed in Chapter 2, "Project Description," traffic control plans would be developed in accordance with the conditions required by the agency with jurisdiction over the roadway and would also include signage and flag persons. Therefore, the implementation of approved traffic control plans would minimize disruptions to existing pedestrian, bicycle, and transit facilities during project construction. The Suisun City Active Transportation Plan proposes Class II bicycle lanes along Main Street between Cordelia Street and SR 12 (STA 2020b: 21), and the City of Fairfield Active Transportation Plan proposes a Class IV Separated Bikeway along Ohio Street/Union Avenue between Jefferson Street and Broadway (STA 2020c: 24). The proposed project would not result in the permanent modification of any existing transit, pedestrian, or bicycle facilities nor would it prohibit the implementation of planned facilities identified in local plans. For these reasons, the proposed project would not conflict with a program, plan, ordinance, or policy addressing transit, bicycle, or pedestrian facilities. This impact would be less than significant, and no mitigation is required.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3(b), which pertains to vehicle miles traveled?

Less-than-significant impact. The City of Fairfield and Suisun City have not adopted VMT guidelines and thresholds that address CEQA Guidelines Section 15064.3. Therefore, the VMT analysis herein relies on the guidance provided in CEQA Guidelines Section 15064.3 and the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory), which provide guidance for VMT analysis. The OPR Technical Advisory provides guidance related to screening thresholds for small projects. Generally, projects that generate or attract fewer than 110 trips per day can be presumed to result in a less-than-significant VMT impact, absent substantial evidence indicating otherwise (OPR 2018). This analysis assumes that construction workers and proposed project employees would not carpool and thus would generate two trips per worker per day.

Relevant to calculating trips is State CEQA Guidelines Section 15064.3(a), which states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." Here, the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks (OPR 2018). Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT) but need not be. Therefore, larger on-road vehicles that do not fall within the categories of cars and light trucks do not need to be considered in calculations of trips or VMT.

<u>Construction</u>

As detailed in Chapter 2, "Project Description," construction is anticipated to begin in summer 2026 and occur over approximately 24 months. Therefore, construction activities associated with the proposed project would not result in a permanent increase in vehicular trips along roadways in and around the project area because construction would be temporary and intermittent. Different phases of construction would require varying numbers of construction personnel. Five to ten workers would be anticipated to be on-site during construction activity. For a conservative

analysis, it is assumed that 10 workers per day would be on-site during the construction of the proposed project. Assuming each worker would generate two trips per day, construction workers would generate a total of 20 daily commute trips during project construction. Therefore, the number of construction worker trips would not exceed the OPR Technical Advisory screening criteria for small projects (i.e., 110 new daily trips per day). For these reasons, it is not anticipated that the proposed project would result in a substantial increase in VMT during construction.

Operational

As detailed in Chapter 2, "Project Description," the operation and maintenance of the new force mains and stormwater improvements would be similar to that of existing conditions and is not anticipated to require additional employees. Because the proposed project is not a land use development that would result in population growth, the number of daily trips associated with operational and maintenance activities is not expected to substantially increase VMT. Therefore, the proposed project would be consistent with OPR Technical Advisory screening criteria for small projects because it would generate fewer than 110 new daily trips between existing and existing plus project conditions. For these reasons, it is not anticipated that the proposed project would result in a substantial increase in VMT during operations.

Summary

Construction and operational activities would generate fewer than 110 new trips per day consistent with OPR Technical Advisory screening for small projects. Therefore, the proposed project would not conflict or be inconsistent with State CEQA Guidelines Section 15064.3. This impact would be less than significant, and no mitigation is required.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less-than-significant impact. The proposed project impacts related to transportation hazards during construction and operation are detailed below.

Construction

Project construction activities would require the hauling of heavy equipment (e.g., excavator, crane, paver) to the project area and the operation of large trucks on the surrounding roadway network. The project alignment and alignment options would be located along several roadways within the City of Fairfield and Suisun City including Civic Center Boulevard, Main Street, SR 12, Ohio Street, Illinois Street, Webster Street, Lotz Way, and Madison Street. As detailed under Impact 3.17.2a, there are bicycle and pedestrian facilities located along several of these roadways. Therefore, construction of the proposed project could result in temporary increases in transportation hazards related to the movement of heavy vehicles and construction equipment mixed with vehicles, bicyclists, and pedestrians navigating the surrounding roadway network.

An encroachment permit would be required from the agency with jurisdiction over each affected roadway for all construction activity within the public right-of-way. As detailed in Chapter 2, "Project Description," a traffic control plan would be developed and approved by the applicable agency (i.e., City of Fairfield, Suisun City, and/or Caltrans) with jurisdiction over the roadway. Caltrans and the Cities of Fairfield and Suisun City require that traffic control plans are compliant with the California Manual of Uniform Control Devices (CA-MUTCD), which provides guidance to ensure the safe movement of all roadway users through or around temporary traffic control zones (City of Fairfield 2014; City of Suisun City 2023). Per Section 6B.01 of the CA-MUTCD, adequate warning, delineation, and channelization should be provided to assist in guiding road users (e.g., motorists, bicyclists, and pedestrians) in advance of and through the traffic control zone (Caltrans 2024: 1032). Additionally, all traffic control plans would be subject to review and approval by the agency with jurisdiction over the roadway, ensuring that adequate traffic control and other safety measures in compliance with the CA-MUTCD would be provided during project construction. For these reasons, the proposed project would not be anticipated to substantially increase transportation-related hazards during construction activities.

Operations

Operational activities associated with the proposed project would not require the construction or alteration of any public roadways; thus, operation and maintenance of the proposed project would not substantially increase hazards due to a design feature. Although operational and maintenance activities could result in additional truck trips to and from the project area, the types of vehicles and equipment (e.g., light trucks) accessing the project area during operational activities would be consistent with those used under existing conditions, as the existing force main is located within the same area. Therefore, the proposed project would not substantially increase hazards due to incompatible uses. For these reasons, the proposed project would not be anticipated to increase transportation-related hazards during operations.

Summary

The proposed project would be subject to and adhere to all applicable design standards and safety regulations that are intended to reduce transportation hazards. FSSD would implement a traffic control plan to ensure that potential transportation hazards are minimized during construction within the public right-of-way. The traffic control plan would be subject to review by Caltrans and/or the City of Fairfield or Suisun City to ensure that applicable construction safety standards would be met. For these reasons, the proposed project would not substantially increase transportation hazards due to a design feature or incompatible use. This impact would be less than significant, and no mitigation is required.

d) Result in inadequate emergency access?

Less-than-significant impact. Construction of the proposed project would require temporary lane closures and potential roadway closures. Therefore, the construction of the proposed project could temporarily impede emergency access. As detailed in Chapter 2, "Project Description," a traffic control plan would be developed for any construction performed within the public right-of-way and would be subject to review and approval of Caltrans or the city with jurisdiction over the roadway, including responsible emergency service agencies. Additionally, all construction activity would be required to comply with the 2022 California Fire Code, adopted by reference in Section 8.1 of the Fairfield Municipal Code and Section 15.04.030 of the Suisun City Municipal Code. The California Fire Code includes requirements to maintain emergency vehicle access during construction as well as design standards for roadways to ensure adequate fire apparatus access during operations. Further, implementation of the proposed project would not require the construction or redesign of any public roadways; thus, existing emergency access would be maintained during operations. For these reasons, adequate emergency access would be provided during construction and operations. This impact would be less than significant, and no mitigation is required.

3.18 TRIBAL CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. Tribal Cultural Resources. Has a California Native American Tribe requested consultation in accordance with Public Resources Code section 21080.3.1(b)?				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:		Yes ☐		No ☒
a) 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)?	☐	☐	☐	☒
b) 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

3.18.1 Environmental Setting

On July 24, 2024, FSSD sent a notification letter that the project was being addressed under CEQA, as required by PRC 21080.3.1, to the Confederated Villages of Lisjan Nation, Corinna Gould, Tribal Chair. The tribe responded on July 24, 2024 that the project area was not in their traditional territory and did not request formal consultation. No known resources within the project alignment or alignment options have been identified as tribal cultural resources as defined in PRC Section 21074.

A records search of the NAHC Sacred Lands File (SLF) was completed on April 26, 2022. The NAHC search indicated that the SLF was negative for the presence of known Native American resources within the project area (FSSD 2024).

3.18.2 Discussion

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) 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)?

No impact. As described in Section 3.5, Cultural Resources, the NWIC records search (File No.: 22-1149) did not identify any precontact archaeological sites. Therefore, neither the project alignment nor alignment options contain tribal cultural resources that are listed or eligible for listing in the CRHR or in a local register of historical resources. There would be no impact, and no mitigation is required.

b) 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Less-than-significant impact with mitigation incorporated. The SLF search did not identify any documented sacred lands in the project area. As detailed above, an AB 52 notification letter was sent to Confederated Villages of Lisjan Nation because the tribe had submitted a request to FSSD to be notified of projects. The Confederated Villages of Lisjan Nation responded that the project area was not in their traditional territory. No tribal cultural resources as defined by PRC Section 21074 have been identified in the project area. Nevertheless, the possibility remains that tribal cultural resources could be encountered during construction-related ground-disturbing activities. Therefore, this impact would be potentially significant.

Mitigation Measure 3.18-1: Protect Unanticipated Discoveries of Potential Tribal Cultural Resources

If any suspected tribal cultural resources, including midden soil, artifacts, chipped stone, exotic rock (nonnative), or unusual amounts of baked clay, shell, or bone, are discovered during ground-disturbing construction activities, all work will cease within 100 feet of the find. Appropriate tribal representative(s) will be immediately notified and will determine whether the find is a tribal cultural resource (pursuant to PRC Section 21074). If the find is determined to be a tribal cultural resource, the appropriate tribal representative(s) will make recommendations for further evaluation and treatment, as necessary. If the find is determined not to be a tribal cultural resource as defined in PRC Section 21074, construction may proceed.

Preservation in place is the preferred alternative under CEQA and the tribes' protocols, and every effort must be made to preserve the resources in place, including through project redesign. Culturally appropriate treatment may be, but is not limited to, processing materials for reburial, minimizing handling of cultural objects, leaving objects in place within the landscape, or returning objects to a location within the project vicinity where they will not be subject to future impacts. Tribes do not consider curation of tribal cultural resources to be appropriate or respectful and request that materials not be permanently curated unless approved by the tribal representative. Treatment that preserves or restores the cultural character and integrity of a tribal cultural resource may include tribal monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or cultural soil (soils containing and surrounding the discovery).

Significance after Mitigation

Implementation of Mitigation Measure 3.18-1 would reduce impacts on tribal cultural resources by requiring appropriate treatment and proper care of significant tribal cultural resources, in the case of a discovery. This impact would be less than significant with mitigation incorporated.

3.19 UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. Utilities and Service Systems. Would the project:				
a) Require or result in the relocation or construction of construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider that 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?	☐	☐	☐	☒
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?	☐	☐	☒	☐
e) Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

3.19.1 Environmental Setting

Existing utilities within the project area include PG&E gas transmission mains, substation, and electrical duct banks, Kinder Morgan fuel lines, City of Vallejo water mains, City of Fairfield sanitary sewer and water distribution system, FSSD's existing sewer force mains, local storm drains, and AT&T communication duct banks (Carollo 2023).

The closest landfill to the project area is Potrero Hills Landfill, approximately 4 miles to the southeast in the City of Suisun City. Potrero Hills Landfill has a remaining capacity of 13,872,000 cubic yards, and the anticipated cease operation date for the landfill is approximately February 2048 (CalRecycle 2024).

3.19.2 Discussion

a) Require or result in the relocation or construction of construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?

Less-than-significant impact. Existing utilities located in the project area include gas transmission mains, electrical duct banks, fuel lines, a substation, water mains, sanitary sewer system, storm drains, and telecommunication infrastructure.

The proposed project would construct two new parallel force mains to operate in lieu of the existing Suisun Force Main and stormwater improvements to reduce pollutants. Implementation of the proposed project would not increase the use of water, electric power, natural gas or telecommunication services that would require the construction of new or expanded water, electric power, natural gas, or telecommunication facilities. The proposed project would not result in the increase of wastewater generation that would require construction of wastewater treatment facilities. Implementation of the proposed project would increase the existing stormwater conveyance infrastructure capacity to accommodate runoff during storm events and provide stormwater improvements to reduce stormwater pollution. The proposed project would not require construction of new or expanded stormwater drainage. Utilities impacts would include the potential for temporary shutdowns for existing utilities during construction. Major utility relocations are not anticipated from project implementation (Carollo 2023). Kinder Morgan fuel lines, PG&E transmission gas mains, and water mains would have vertical and/or horizontal separation requirements for sanitary sewer force mains. The proposed force mains would be pressure pipelines that can be shifted horizontally or vertically to meet the separation requirements, if needed. Therefore, implementation of the proposed project would not require construction or relocation of new or expanded water, wastewater treatment, electric power, natural gas, or telecommunication facilities. Impact would be less than significant; and no mitigation is required.

b) Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less-than-significant impact. Implementation of the project would ensure service reliability by constructing two new parallel force mains and install stormwater improvements. Operation of the proposed project would not increase demand for water. Water may be used during construction for dust suppression; however, the water used for dust suppression would be short-term and minimal. Impacts would be less than significant, and no mitigation is required.

c) Result in a determination by the wastewater treatment provider that 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?

No impact. Implementation of the proposed project would ensure FSSD's service reliability and would not induce a demand for additional wastewater treatment. The proposed project would improve the system delivery to the existing wastewater treatment plant and would provide stormwater drainage improvements. No impact would occur, and no mitigation is required.

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?

Less-than-significant impact. Project construction would generate waste from trench evacuation, but no solid waste would be generated during operation. The Potrero Hills Landfill is located approximately 4 miles to the southeast and accepts construction debris. The landfill has a remaining capacity of 13,872,000 cubic yards and an anticipated cease operation date in February 2048 (CalRecycle 2024). Approximately 537,000 cubic yards of soil would be hauled offsite during construction. The Potrero Hills Landfill would have sufficient remaining capacity to accommodate the solid waste generated during construction. Implementation of the proposed project would not generate solid waste in excess demand of state or local standards, in excess of the capacity of local infrastructure, or impair the attainment of solid waste reduction goals. Impact would be less than significant, and no mitigation would be required.

e) Fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less-than-significant impact. Implementation of the proposed project would result in solid waste during construction. Solid waste would be hauled off and disposal of in accordance with state and local regulations to a permitted facility, such as the Potrero Hills Landfill. As discussed in Impact 3.19.2d, the Potrero Hills Landfill would have sufficient remaining capacity to accommodate the solid waste generated during construction. The operation of the proposed project would not generate solid waste. Implementation of the proposed project would not generate solid waste in excess demand of state or local standards, negatively impact the provision of solid waste services, or conflict with federal, state, and local management and reduction statutes. Therefore, impacts would be less than significant, and no mitigation is required.

3.20 WILDFIRE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. Wildfire. Is the project located in or near state responsibility areas or lands classified as high fire hazard severity zones? 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?	☐	☐	☒	☐
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?	☐	☐	☐	☒
c) Require the installation 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 to the environment?	☐	☐	☐	☒
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?	☐	☐	☒	☐

3.20.1 Environmental Setting

As discussed above in Section 3.9, "Hazards and Hazardous Materials," the project area is not located within or near a High FHSZ designated by CAL FIRE. The nearest High FHSZ is located approximately 4 miles from the project area west of Suisun Valley Road in the City of Fairfield (CAL FIRE 2024).

3.20.2 Discussion

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Less-than-significant impact. See Section 3.9, "Hazards and Hazardous Materials" Impact 3.9.2f, work on city streets would require temporary lane closures and potentially temporary road closures depending on locations and coordination with city requirements. As discussed in Chapter 2, Section 2.4.4, "Construction," traffic control plans would be developed and approved by the city with jurisdiction over the roadway. Flagging, signage, and workers would be provided consistent with city requirements and lane closures would avoid peak travel periods to the extent possible. Implementation of traffic control plans would ensure that roadways would remain accessible to emergency vehicles during construction. Therefore, the project would not impair an emergency response or evacuation plan. This impact would be less than significant, and no mitigation is required.

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?

No impact. The project would not exacerbate wildfire risks or include construction of structures that would be inhabited. In addition, the project area is generally flat and is not located within a High FHSZ. Therefore, the project would not exacerbate wildfire risks in the project area. There would be no impact, and no mitigation is required.

c) Require the installation 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 to the environment?

No impact. The project includes construction of two new force mains, appurtenant structures (e.g., air release valves, blowoff assemblies), and stormwater improvements. Therefore, the project does not require the installation of infrastructure that could exacerbate fire risk. The project would not require construction of new roads, fuel breaks, emergency water sources, or power lines. Therefore, there would be no impact, and no mitigation is required.

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?

Less-than-significant impact. The project is in an area of flat terrain and would not involve the changing of slopes that could expose people to risks of flooding from post-fire slope instability. Implementation of the project would require replacing existing pavement along roadways affected by construction, but would not increase impervious surfaces along the project alignment or alignment options that could increase runoff and stormwater improvements would improve localized drainage. The project would not result in substantial runoff or drainage changes that would expose people or structures to significant risks. The impact would be less than significant, and no mitigation is required.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. Mandatory Findings of Significance.				
a) Does the project 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 an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

3.21.1 Environmental Setting

3.21.2 Discussion

a) Does the project 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 an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

Less-than-significant impact with mitigation incorporated. As discussed in the biological resources and cultural resources sections of this Initial Study, the project would result in potentially significant impacts and could degrade the quality of the environment. However, adoption and implementation of mitigation measures described in this Initial Study would reduce these individual impacts to less-than-significant levels.

The project area provides potentially suitable habitat for special-status birds and raptors, special-status plants, northwestern pond turtle, Crotch's bumble bee, and wetlands, which could be affected by the project. However, implementation of Mitigation Measures 3.4-1 through 3.4-6 would reduce potential impacts on these sensitive biological resources to a less-than-significant level by requiring preconstruction surveys, maintaining buffers, and minimizing the potential for inadvertent discharge into wetlands.

The Southern Pacific Railroad (P-48-000549) has been recorded within the project alignment. However, it was previously evaluated and determined to be ineligible for the NRHP and CRHR. Although no documented archaeological resources are located within the project area, the potential exists to encounter previously undiscovered archaeological resources during construction-related ground disturbing activities. However, adoption and implementation of Mitigation Measure 3.5-1 would reduce this potential impact to a less-than-significant level because these measures would require implementation of preservation options and proper curation if significant artifacts are recovered.

Although there are no known tribal cultural resources within the project area, it is possible that yet-undiscovered tribal cultural resources could be encountered or damaged during ground-disturbing construction activities. Implementation of Mitigation Measures 3.18-1 would reduce impacts to tribal cultural resources to a less-than-significant level by requiring appropriate treatment and proper care of significant tribal cultural resources, in the case of a discovery.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less-than-significant impact with mitigation incorporated. Cumulative environmental effects are multiple individual effects that, when considered together, would be considerable or compound or increase other environmental impacts. Individual effects may result from a single project or a number of separate projects and may occur at the same place and point in time or at different locations and over extended periods of time. The purpose of the project is to construct two new force mains to operate in lieu of the existing Suisun Force Main and ensure reliability of service into the future and install stormwater improvements to reduce pollutants. The project would not increase population growth either directly or indirectly beyond what has been planned for in the city or county general plans. Implementation of the mitigation measures proposed in this Initial Study would reduce the project's impacts to a less-than-significant level. The project's contribution to environmental impacts would be less than cumulatively considerable.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Less-than-significant impact with mitigation incorporated. As identified in this Initial Study, the project could have impacts associated with air quality, biological resources, cultural resources, geology and soils, and tribal cultural resources. Impacts to biological resources, cultural resources, geology and soil, and tribal cultural resources would not directly affect human beings. All other impacts would be temporary and would be mitigated to a less-than-significant level. Therefore, implementation of the proposed project would not result in substantial adverse effects on human beings, either directly or indirectly. With implementation of mitigation, this impact would be less than significant.

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4 COMPLIANCE WITH FEDERAL LAWS AND REGULATIONS

This chapter summarizes the federal environmental laws and regulations that apply to the project and describes the project's compliance with those laws and regulations. The federal regulations addressed in this section are based on guidance from the State Water Resources Control Board (SWRCB) for CEQA-Plus environmental review related to State Revolving Fund loans.

4.1 CLEAN AIR ACT

4.1.1 Regulatory Background

The proposed project area is located in the cities of Fairfield and Suisun City, within the San Francisco Bay Area Air Basin (SFBAAB). Air quality within the project area is regulated by the US Environmental Protection Agency (EPA) and the California Air Resources board (CARB) at the federal and state levels, respectively, and locally by the Bay Area Air Quality Management District (BAAQMD).

At the federal level, EPA implements the national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), enacted in 1970. The most recent major amendments were made by Congress in 1990. The CAA requires EPA to establish National Ambient Air Quality Standards (NAAQS). EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (i.e., respirable particulate matter with an aerodynamic diameter less than or equal to 10 microns [PM_{10}] and fine particulate matter with an aerodynamic diameter less than or equal to 2.5 microns [$PM_{2.5}$]), and lead. The CAA also requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The CAA Amendments added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. Each state's SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA reviews all state SIPs to check for consistency with the mandates of the CAA and its amendments and to determine whether implementing them will achieve air quality goals. If EPA determines a SIP to be inadequate, a Federal Implementation Plan that imposes additional control measures may be prepared for nonattainment areas. If the state fails to submit an approvable SIP or to implement the plan within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basins.

On November 30, 1993, EPA promulgated the general conformity regulations, which were established to ensure that federal actions do not cause or contribute to new violations of the NAAQS, do not worsen existing violations of the NAAQS, and do not delay attainment of the NAAQS. These regulations apply to a proposed federal action, except actions covered by federal transportation conformity, in an area designated as a nonattainment or maintenance area with respect to the NAAQS if the total direct and indirect emissions of the relevant criteria pollutant and precursor emissions caused by the proposed action would be equal to or exceed specified *de minimis* amounts. Thus, requiring the federal agency to make a determination regarding general conformity. The manner in which this regulatory information applies to the proposed Suisun Force Main Reliability Project is discussed below.

4.1.2 Affected Environment

EPA designates each county (or portions of counties) within California as attainment, maintenance, or nonattainment based on the area's ability to maintain ambient air concentrations below the applicable NAAQS. Areas are designated as attainment if ambient air concentrations of a criteria pollutant or precursor are below the NAAQS. Areas are designated as nonattainment if ambient air concentrations exceed the NAAQS. Areas previously designated as nonattainment that subsequently demonstrated compliance with the NAAQS are designated as maintenance areas. Solano County is currently designated as a moderate nonattainment area with respect to the NAAQS for ozone and $PM_{2.5}$ (EPA 2024a, EPA 2024b).

As mentioned above, a general conformity determination is required if a federal action results in the generation of air pollutants for which the total of direct and indirect emissions equals or exceeds the *de minimis* criteria. Different *de minimis* levels apply to different locations. Table 4-1 shows the *de minimis* levels that apply in Solano County. It should be noted that because ozone is a secondary pollutant (i.e., it is not emitted directly into the atmosphere, but formed in a photochemical reaction in the atmosphere involving ozone precursors and sunlight), its *de minimis* level is based on the primary emissions of precursor pollutants: oxides of nitrogen (NO_X) and volatile organic compounds (VOCs). If the net emissions of either NO_X or VOCs exceeds the *de minimis* level for ozone, the project is required to prepare an official general conformity determination.

Table 4-1 *De Minimis* Criteria for Determining Applicability of General Conformity Requirements for Federal Actions in the San Francisco Bay Area Air Basin

Pollutant	Federal Designation in Solano County	General Conformity *De Minimis* Criterion (tons per year)
Ozone	Nonattainment (Moderate)	NA
VOC (as an ozone precursor)		100
NO_x (as an ozone precursor)		100
$PM_{2.5}$	Nonattainment (Moderate)	100

Notes: NA = Not Applicable; VOC = volatile organic compound; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

Source: EPA 2024a, EPA 2024b.

PROJECT EMISSIONS

Construction and operational emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2022.1 computer program (CAPCOA 2022.1), based on project-specific information, where available; assumptions based on typical construction activities; and default values in CalEEMod. Table 4-2 summarizes the modeled emissions of VOCs, NO_X, and exhaust $PM_{2.5}$ from project construction, as well as operational activities. See Appendix B modeling results for more detail.

Table 4-2 Annual Emissions of Criteria Air Pollutants and Precursors for Project Construction and Operation

Year	Activity	Tons per Year		
		VOC[1]	NO_X	$PM_{2.5}$
2026	Construction	<1	2	<1
2027	Construction	<1	2	<1
	de minimis criterion	100	100	100
	Criterion Exceeded?	No	No	No

[1] Although, EPA has established a *de minimis* criterion for VOCs, emissions are reported as reactive organic gases (ROG) due to the outputs provided by CalEEMod. Most pollutants in CARB's definition of ROG and EPA's definition of VOC overlap, and most ROG emissions are included as a subset of VOCs. Thus, ROG is assumed to be a suitable proxy for VOC for the purposes of this analysis.

Notes: Construction emissions estimates are based on modeling in CalEEMod using equipment assumptions within the CalEEMod model and project-specific parameters.

VOC=volatile organic compounds; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

Source: Data compiled by Ascent in 2024.

As shown by the estimates in Table 4-2, project-related emissions would be less than the *de minimis* criteria. Therefore, an official general conformity analysis pursuant to the CAA is not required.

4.2 COASTAL BARRIERS RESOURCES ACT

The Coastal Barrier Resources Act (PL 97-348) designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System (System). Areas so designated were made ineligible for direct or indirect federal financial assistance that might support development, including flood insurance, except for emergency life-saving activities. Exceptions for certain activities, such as fish and wildlife research, are provided, and National Wildlife Refuges and other, otherwise protected areas are excluded from the System. The System includes relatively undeveloped coastal barriers along the Atlantic and Gulf coasts, as well as the Great Lakes and Puerto Rico and the Virgin Islands.

The project is located within the cities of Fairfield and Suisun City, and the project area and surrounding lands are not located within the System. Therefore, compliance with this Act is not applicable.

4.3 COASTAL ZONE MANAGEMENT ACT

The Coastal Zone Management Act (PL 92-583), administered by National Oceanic and Atmospheric Administration Fisheries Service's (NOAA Fisheries) Office of Ocean and Coastal Resource Management, provides for management of the nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation.

The Act outlines two national programs, the National Coastal Zone Management Program and the National Estuarine Research Reserve System. The 34 coastal programs aim to balance competing land and water issues in the coastal zone, while estuarine reserves serve as field laboratories to provide a greater understanding of estuaries and how humans impact them. The Act's overall program objectives remain balanced to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

In California, the Coastal Zone Management Act is implemented through the California Coastal Commission, California Coastal Conservancy, and the San Francisco Bay Conservation and Development Commission (BCDC). Suisun Slough is adjacent to the proposed alignment and alignment options. While direct effects to Suisun Slough are not expected, the project would comply with BCDC regulations for disturbance within 100 feet of Suisun Slough, which would ensure the project would not have an impact on Suisun Slough.

4.4 MARINE MAMMAL PROTECTION ACT

The Marine Mammal Protection Act (16 USC Chapter 31), first enacted in 1972, provides for protection of all marine mammals (whales, dolphins, seals, and sea lions) in the United States. The MMPA provides that it shall be unlawful, with certain permitted exceptions, to take a marine mammal in waters of the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal."

The project area and surrounding lands are not located within a marine environment where marine mammals could occur; therefore, compliance with this Act is not applicable.

4.5 ENDANGERED SPECIES ACT

Pursuant to the federal Endangered Species Act (ESA) (PL 93-205), the US Fish and Wildlife Service (USFWS) and NOAA Fisheries have regulatory authority over federally listed species. Under ESA, a permit to "take" a listed species is required for any federal action that may harm an individual of that species. Take is defined under ESA Section 9 as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation, take is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. ESA Section 7 outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult

with USFWS and/or NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species.

As discussed in Table 3.4-1 of Chapter 3 of this Initial Study, the project alignment does pass through/near areas that may provide habitat for federally listed species. However, the project includes measures to ensure avoidance and that no substantial adverse effects (directly or indirectly) would occur to federally listed species, and therefore, no consultation with USFWS or NOAA Fisheries is needed for this project.

4.6 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (59 Federal Register 7629 (1994]), directs federal agencies to identify and address disproportionately high and adverse health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The EO also directs each federal agency to develop a strategy for implementing environmental justice. EO 12898 is also intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.

The Council on Environmental Quality (CEQ) has oversight of the federal government's compliance with EO 12898. To facilitate compliance, CEQ prepared and issued, in consultation with EPA, Environmental Justice Guidance under the National Environmental Policy Act (NEPA) (CEQ 1997). According to the CEQ's Environmental Justice Guidance, the first step in conducting an environmental justice analysis is to define minority and low-income populations. Based on these guidelines, a minority population is present in a project area if either (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population. By the same rule, a low-income population exists if the project area consists of 50 percent or more people living below the poverty threshold, as defined by the US Census Bureau, or is significantly greater than the poverty percentage of the general population.

The second step of an environmental justice analysis requires a finding of a high or adverse effect. The CEQ guidance indicates that when determining whether the effects are high and adverse, agencies are to consider whether the risks or rates of impact "are significant (as employed by NEPA) or above generally accepted norms." The final step requires a finding that the effect on the minority or low-income population be disproportionately high and adverse. The CEQ offers a non-quantitative definition stating that an effect is disproportionate if it appreciably exceeds the risk or rate to the general population.

The following population characteristics are considered in this analysis:

- race and ethnicity per the 2018-2022 American Community Survey 5-Year Estimates, and
- per capita income as it relates to the federal poverty threshold.

To make a finding that disproportionately high and adverse effects would likely fall on a minority or low-income population, three conditions must be met simultaneously: (1) there must be a minority or low-income population in the affected area, (2) a high and adverse effect must exist, and (3) the effect must be disproportionately high and adverse on the minority or low-income population.

For the purposes of this analysis, information on demographics and income and poverty status was obtained for the cities of Fairfield and Suisun City and Solano County. The data is estimated for 2018-2022 by the US Census Bureau, which, for purposes of this analysis, is considered "existing conditions."

4.6.1 Demographics

Table 4-3 presents the demographics per the 2018-2022 American Community Survey 5-Year Estimates for the cities of Fairfield and Suisun City and Solano County. During this 5-year range, it is estimated that approximately 28.4 percent of the population in City of Fairfield identified themselves as white; approximately 15.1 percent identified themselves as

black; less than 1 percent identified themselves as American Indian/Alaska Native; and 17.8 percent identified themselves as Asian. Approximately 29.9 percent of the City of Fairfield's population identified themselves as Hispanic or Latino, which is slightly higher than the County's estimate of 28 percent. During the same 5-year range, it is estimated that approximately 22.5 percent of the population in the City of Suisun City identified themselves as white; approximately 21.0 percent identified themselves as black; 1.2 percent identified themselves as American Indian/Alaska Native; and 16.2 percent identified themselves as Asian. Approximately 30.2 percent of Suisun City's population identified themselves as Hispanic or Latino, which is slightly higher than the County's estimate of 28 percent (US Census Bureau 2023a).

Table 4-3 Demographics: City of Fairfield, Suisun City, and Solano County

	City of Fairfield		Suisun City		Solano County	
	Number	Percent of Total Population*	Number	Percent of Total Population*	Number	Percent of Total Population*
Total Population	**119,420**	**100.0%**	**29,350**	**100.0%**	**450,995**	**100.0%**
Race						
White	33,951	28.4%	6,601	22.5%	160,034	35.5%
Black or African American	18,081	15.1%	6,178	21.0%	58,379	12.9%
American Indian and Alaska Native	347	0.3%	348	1.2%	1,592	0.4%
Asian	21,292	17.8%	4,743	16.2%	69,009	15.3%
Native Hawaiian and Other Pacific Islander	1,221	1.0%	300	1.0%	3,746	0.8%
Other Race Not Identified Above	738	0.6%	196	0.7%	3,253	0.7%
Two or More Races	8,092	6.8%	2,133	7.3%	28,784	6.4%
Hispanic or Latino	35,698	29.9%	8,851	30.2%	126,198	28.0%

*The total may not add up due to rounding.

Source: US Census Bureau 2023a.

4.6.2 Income and Poverty Status

Table 4-4 presents household income status for the cities of Fairfield and Suisun City and Solano County per the 2018-2022 American Community Survey 5-Year Estimates. Median household income was $98,857 in the City of Fairfield, $95,394 in Suisun City, and $97,037 in Solano County (US Census Bureau 2023b). In 2022, the weighted average federal poverty threshold was $14,880 for one person and $23,280 for a three-person family (US Census Bureau 2023c). Approximately 9.2 percent of individuals in the City of Fairfield and 9.0 percent of individuals in Suisun City were below the poverty level, which was similar to that of the County (approximately 9.0 percent of individuals) (US Census Bureau 2023b).

Table 4-4 Household Income and Poverty Status: City of Fairfield, Suisun City, and Solano County

	City of Fairfield	Suisun City	Solano County
Total Households	**37,593**	**9,655**	**154,987**
Income Categories	**Percent of Total Household***		
Less than $10,000	3.9%	3.5%	3.8%
$10,000 to $14,999	1.7%	3.1%	2.2%
$15,000 to $24,999	3.5%	4.0%	4.0%
$25,000 to $34,999	6.1%	5.2%	5.0%
$35,000 to $49,999	7.3%	10.2%	8.5%

	City of Fairfield	Suisun City	Solano County
$50,000 to $74,999	14.2%	12.3%	13.5%
$75,000 to $99,999	14.0%	15.1%	14.4%
$100,000 to $149,999	22.3%	23.7%	21.1%
$150,000 to $199,999	11.2%	10.3%	12.1%
$200,000 or more	16.0%	12.6%	15.4%
Total	100%	100%	100%
Median Household Income	$98,857	$95,394	$97,037
Per Capita Income	$40,400	$36,348	$42,886
Percent of Poverty Status – Individuals	9.2%	9.0%	9.0%

*The total may not add up due to rounding.

Source: US Census Bureau 2023b, 2023d.

4.6.3 Impact Evaluation

(1) Is there a Minority or Low-Income Population in the Affected Area?

As described above, in the 2018-2022 American Community Survey, approximately 29.9 percent of the City of Fairfield and 30.2 percent of Suisun City's population identified themselves as Hispanic or Latino, which is slightly higher than the County's average (approximately 28.0 percent) (US Census Bureau 2023a). Approximately 9.2 percent of individuals in the City of Fairfield and 9.0 percent in Suisun City were below the poverty level, which was similar to that of the County (approximately 9.0 percent of individuals).

According to the EPA, either the county or state percentages can be used when considering the scope of the "general population." A definition of "meaningfully greater" is not given by the CEQ or EPA, although the EPA notes that any affected area that has a percentage of minorities that is above the state's percentage is potentially a minority community and any affected area with a minority percentage at least double that of the state is definitely a minority community under EO 12898.

As shown in Table 4-3, the percentage of persons of other races, including African Americans and persons of Hispanic origin within the City of Fairfield and Suisun City, are slightly higher than the percentages for Solano County, but is not meaningfully greater than the county percentage. In addition, median household income and poverty levels within the project area and the area served by the project are similar to the income and poverty levels within the overall county (see Table 4-4). Therefore, no minority or low-income populations have been identified that would be adversely impacted by the proposed project as determined above. Therefore, in accordance with the provisions of EO 12898 and Federal Highway Administration Order 6640.23, no further Environmental Justice analysis is required.

(2) Is there a High and Adverse Effect? and (3) Is the Effect Disproportionately High and Adverse on the Minority Population?

Construction of two new force mains would improve the reliability for all customers in the service area, improving service for all customers equally. Temporary construction impacts associated with the project would occur along the new alignment. Nearby residences could be subject to construction-related impacts, including increased noise and traffic. However, these impacts would be short-term, and construction would take place when most residents are not expected to be home (i.e., during working hours). In addition, the operation of the new force mains would not affect residences in the surrounding neighborhood. Therefore, construction and operation of the project would not have a disproportionately high and adverse effect on a minority population.

4.7 FARMLAND PROTECTION POLICY ACT

The purpose of the federal Farmland Protection Policy Act (FPPA) of 1981 (Public Law 97-98) is to minimize federal contributions to the conversion of farmland to nonagricultural uses by ensuring that federal programs are administered in a manner compatible with state government, local government, and private programs designed to protect farmland. The Natural Resources Conservation Service (NRCS) is the agency primarily responsible for implementing the FPPA.

US Department of Agriculture (USDA) Regulations (7 CFR Part 658) implementing the FPPA requires federal agencies to conduct a farmland conversion impact rating (using USDA Form AD-1006) when a project may convert farmlands to non-agricultural uses. This impact rating should be done when the impacts of a project will affect farmlands in the following categories:

- prime farmland - the highest quality land for food and fiber production having the best chemical and physical characteristics for producing;
- unique farmland - land capable of yielding high value crops such as citrus fruits, olives; and
- farmlands designated as important by state and local governments, with the approval of the Secretary of Agriculture.

Neither the Act nor the regulations apply if:

- the project site does not contain farmland in categories identified above.
- the project is on prime farmland that is already "committed" to urban development or water storage (applies to prime farmland only – refer to 7 CFR 658.2(a)).
- projects were beyond the planning stage prior to August 6, 1984.
- projects involve grants, loans, or mortgage insurance for purchase or rehabilitation of existing structures.

As discussed in Section 3.2, "Agricultural Resources," of this Initial Study, the new force mains would be located within a developed areas of the cities of Fairfield and Suisun City, which are designated as Grazing Land and Urban and Built-Up Land pursuant to the Farmland Mapping and Monitoring Program of the California Department of Conservation. Construction of the two new force mains would have no impact related to conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.

Consultation with NRCS (including submittal of the Farmland Conservation Impact Rating form) does not apply to project sites that do not contain farmland in categories identified above, and therefore is not required for the project.

4.8 FLOODPLAIN MANAGEMENT

EO 13690, "The Federal Flood Risk Management Standard" (January 30, 2015) revises EO 11988, "Floodplain Management" (May 24, 1977), and directs federal agencies to take the appropriate actions to reduce risk to federal investments, specifically to "update their flood-risk reduction standards." The goal of this directive is to improve the resilience of communities and federal assets against the impacts of flooding and recognizes the risks and losses due to climate change and other threats.

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRMs) are used to determine if properties are located within Special Flood Hazard Areas. As explained in Section 3.10, "Hydrology and Water Quality," of this Initial Study, portions of the project alignment are located within the 100-year floodplain (Zones AO and AE) (FEMA 2016). However, the project would include replacing an existing force main that would be underground once constructed and would not include any new residences. Therefore, the project would not result in any additional exposure of people or structures to risk of flooding, and the project would have no impact related to a 100-year flood hazard area or risk of flooding.

4.9 NATIONAL HISTORICAL PRESERVATION ACT

Federal protection of resources is legislated by (a) the National Historic Preservation Act (NHPA) of 1966 as amended by 16 US Code 470, (b) the Archaeological Resource Protection Act of 1979, and (c) the Advisory Council on Historical Preservation. These laws and organizations maintain processes for determination of the effects on historical properties eligible for listing in the National Register of Historic Places (NRHP). Federal and federally sponsored programs and projects are reviewed pursuant to Section 106 of the NHPA. Section 106 of the NHPA requires federal agencies to consider the effects of proposed federal undertakings on historic properties. NHPA requires federal agencies to initiate consultation with the State Historic Preservation Officer as part of the Section 106 review process.

The area of potential effects (APE) is within an urban area and primarily along existing roadway and therefore, has a low sensitivity for discovery of buried archaeological deposits. No previously identified archaeological resources were identified in the project area. The Southern Pacific Railroad (P-48-000549) has been recorded within the APE. However, it was previously evaluated and determined to be ineligible for the NRHP. No historical resources were identified within the alternative alignments. Additionally, no historical resources pursuant to Section 15064.5 were identified within the project alignment or alterative alignment during the pedestrian survey. As a result, NHPA does not apply.

4.10 ARCHAEOLOGICAL AND HISTORIC PRESERVATION ACT

Passed and signed into law in 1974, the Archaeological and Historic Preservation Act (AHPA) amended and expanded the Reservoir Salvage Act of 1960. The AHPA provides for the preservation of historical and archeological data that might otherwise be irreparably lost or destroyed as the result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or (2) any alteration of the terrain caused as a result of any federal construction project or federally licensed activity or program.

According to the Advisory Council on Historic Preservation, if a project will affect historic properties that have archeological value, the AHPA may impose additional requirements on an agency. As discussed in Section 3.5, "Cultural Resources," the Northwest Information Center records search identified one previously recorded resource within the APE, P-48-000549, the Southern Pacific Railroad; however, the feature is recommended not eligible for the NRHP. Therefore, there are no historic properties within the APE that have archaeological or historic value and the AHPA does not apply.

4.11 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

In response to growing concern about the status of United States fisheries, Congress passed the Sustainable Fisheries Act of 1996 (Public Law [PL] 104-297) to amend the Magnuson-Stevens Fishery Conservation and Management Act (PL 94-265), the primary law governing marine fisheries management in the federal waters of the United States. The Magnuson-Stevens Conservation and Management Act, as amended (USC 180 et seq.), requires that Essential Fish Habitat (EFH) be identified and described in federal fishery management plans. Federal agencies must consult with NOAA Fisheries on any activity which they fund, permit, or carry out, that may adversely affect EFH. NOAA Fisheries is required to provide EFH conservation and enhancement recommendations to the federal agencies. EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity.

As discussed in Section 3.4, "Biological Resources," of this Initial Study, the project area is adjacent to Suisun Slough, which may provide habitat for several fish species. However, the project alignment and alignment options would not involve construction within the slough or associated habitat, and stormwater controls to be implemented during construction would ensure that no indirect effects would occur. As a result, no adverse effects on EFH would occur and the Magnuson-Stevens Fishery Conservation and Management Act, as amended, would not apply.

4.12 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (16 USC Section 703, et seq.), first enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA provides that it shall be unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. The current list of species protected by the MBTA can be found in Title 50 of the Code of Federal Regulations (CFR), Section 10.13 (50 CFR 10.13). The list includes nearly all birds native to the United States.

As discussed in Section 3.4, "Biological Resources," of this Initial Study, the Suisun Force Main Reliability Project area provides potential nesting habitat for grasshopper sparrow, Swainson's hawk, white-tailed kite, saltmarsh common yellowthroat, Suisun song sparrow, and other common nesting birds. Any ground-disturbing or other work activities during the nesting season for these species (approximately February to August) could result in nest abandonment and the mortality of eggs and chicks. However, implementation of Mitigation Measures 3.4-1 and 3.4-5 would prevent take of MTBA species by requiring nest surveys and non-disturbance buffers around active nests, which would prevent nest abandonment and loss of eggs or young.

4.13 BALD AND GOLDEN EAGLE PROTECTION ACT

The Bald and Golden Eagle Protection Act (16 USC Sections 668-668c) declares it is illegal to take bald eagles, including their parts, nests, or eggs unless authorized. "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause injury to an eagle, or a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or nest abandonment. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

As discussed in Section 3.4, "Biological Resources," of this Initial Study, the Suisun Force Main Reliability Project area does not provide potential nesting habitat for bald or golden eagles. Because the project area does not provide habitat for bald or golden eagles, compliance with this Act is not applicable.

4.14 PROTECTION OF WETLANDS

The purpose of EO 11990 (May 24, 1977) is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, EO 11990 requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. EO 11990 applies to: acquisition, management, and disposition of federal lands and facilities construction and improvement projects that are undertaken, financed, or assisted by federal agencies; and federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.

As discussed in Section 3.4, "Biological Resources," of this Initial Study, implementation of the Suisun Force Main Reliability Project could result in direct impacts to federally protected wetlands. The project, however, would comply with Clean Water Act requirements related to impacts to wetlands (i.e., Waters of the United States), and through permitting under Section 404 of the Clean Water Act would ensure no net loss of wetlands along the project alignment.

4.15 FISH AND WILDLIFE CONSERVATION ACT

The Fish and Wildlife Conservation Act of 1980 (16 USC 2901 et seq.) encourages federal agencies to conserve and promote conservation of non-game fish and wildlife species and their habitats. In addition, the Fish and Wildlife Conservation Act (16 USC 661 et seq.) requires federal agencies undertaking projects affecting water resources to

consult with the USFWS and the state agency responsible for fish and wildlife resources whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water will otherwise be controlled or modified for any purpose whatsoever, including navigation and drainages. The 1988 amendment (Public Law 100-653, Title VIII) to the Fish and Wildlife Conservation Act requires the Secretary of the Interior, through the USFWS, to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973."

As noted above and in Chapter 3, "Environmental Checklist," the project may require construction within jurisdictional waters. However, the project would pursue and acquire permits pursuant to the Clean Water Act to ensure that impacts are minimized and result in no net loss of wetland habitat. Furthermore, the majority of impacts associated with the project would be temporary, and affected areas would be restored upon completion of construction. Furthermore, the provisions of Section 662(a) do not apply to those projects involving the impoundment of water where the maximum surface area of such impoundments would be less than 10 acres, nor to activities for or in connection with programs primarily for land management and use carried out by federal agencies with respect to federal lands under their jurisdiction.

4.16 SAFE DRINKING WATER ACT, SOLE SOURCE AQUIFER PROTECTION

The Safe Drinking Water Act (42 USC Section 300f et seq.) was established to protect the quality of drinking water in the United States. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources.

The Act authorizes EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. The 1996 amendments to the Act require that EPA consider a detailed risk and cost assessment, and best available peer-reviewed science, when developing these standards. State governments, which can be approved to implement these rules for EPA, also encourage attainment of secondary standards (nuisance-related). Under the Act, EPA also establishes minimum standards for state programs to protect underground sources of drinking water from endangerment by underground injection of fluids.

The project and surrounding lands are not located within a sole source aquifer, as designated by EPA Region 9 (EPA 2024c). The project would have no effect on any public water systems or other drinking water sources.

4.17 WILD AND SCENIC RIVERS ACT

The Wild and Scenic Rivers Act (16 USC Section 1271 et seq.) establishes a National Wild and Scenic Rivers System for the protection of rivers with important scenic, recreational, fish and wildlife, and other values. Rivers are classified as wild, scenic, or recreational. The act designates specific rivers for inclusion in the System and prescribes the methods and standards by which additional rivers may be added.

The nearest designated wild and scenic river is the Lower American River, located more than 35 miles northeast of the project area. The project area is not visible from the river (BLM et al. 2024).

4.18 RIVERS AND HARBORS ACT

The Rivers and Harbors Act (33 USC. Section 403 et seq.) of 1899 prohibits discharge of refuse matter into navigable waters, or tributaries thereof, of the United States without a permit. Permits are also required for any activities that involve excavating, filling, or altering the course, condition, or capacity of any port, harbor, channel, or other areas covered by the Act. Many of these activities are also regulated by the Clean Water Act.

Suisun Slough, which is adjacent to portions of the project alignment, is a navigable waterway. However, no project-related activities would occur within the slough, and as such, permitting under the Rivers and Harbors Act is not considered necessary.

4.19 WILDERNESS ACT

The purpose of the Wilderness Act (16 USC Section 1131 et seq.) of 1964 is to preserve and protect the natural condition of certain federal lands in the face of competing demands for use of those lands. The Wilderness Act of 1964 accomplishes this by adding certain federal lands to the National Wilderness Preservation System. Far-reaching land use restrictions are imposed on federal lands included in the National Wilderness Preservation System. These protections are afforded only to federal lands within congressionally mapped wilderness areas.

There are no wilderness lands designated in the project vicinity (Wilderness Connect 2019); therefore, compliance with this Act is not applicable.

4.20 CLIMATE CHANGE

4.20.1 Vulnerability

Increases in greenhouse gas (GHG) concentrations in the atmosphere have led to increased global average temperatures (climate change) through the intensification of the greenhouse effect, and associated changes in local, regional, and global average climatic conditions. These changes may translate into a variety of issues and concerns that may affect the project facilities, including but not limited to:

- increased frequency of droughts associated with changes to precipitation patterns,
- increased stormwater runoff associated with changes to precipitation patterns, and
- increased risk of flooding associated with changes to precipitation patterns.

Although uncertainty exists as to the precise levels of these impacts, there is consensus regarding the range, frequency, or intensity of these impacts that can be expected. The proposed project could be subject to potential hazards that could be exacerbated by climate change, such as changes in the amount of wastewater, timing and amount of runoff, and the increased risk of flooding associated with changes to precipitation.

Increases in intense storm events could result in increases in effluent related to stormwater runoff. However, as discussed in Section 3.9, "Hydrology and Water Quality," FSSD has ordinances to address stormwater runoff throughout its service area that would reduce the extent and severity of climate change-related impacts related to stormwater.

As discussed in Section 3.9, "Hydrology and Water Quality," portions of the project alignment are located within the 100-year floodplain (Zones AO and AE) (FEMA 2016). However, the project would include replacing an existing force main that would be underground once constructed. Therefore, the potential for climate change-related impacts from increased risk of flooding associated with changes to precipitation patterns to affect the project facilities is low.

4.20.2 Adaptation

Adaptation measures are measures taken in direct response to vulnerabilities to climate change. The new force mains would be more reliable and would require less energy expenditure for inspection and operation. In addition, the proposed project would increase the existing stormwater conveyance infrastructure capacity to accommodate runoff during storm events.

4.20.3 Mitigation

Although the effects of climate change on the project facilities is considered less than significant, the project would include measures that would reduce FSSD's overall contribution to climate change including mitigation to reduce emissions and energy use during construction and reduced facility maintenance requirements.

5 ALTERNATIVES

5.1 INTRODUCTION

This chapter includes a discussion of alternatives to the proposed project in compliance with State Water Resources Control Board CEQA-Plus requirements related to State Revolving Fund loans and per US Environmental Protection Agency guidance for environmental information documents related to Special Appropriation Fund Grants. These alternatives are provided to meet the CEQA-Plus requirements and are not required for compliance with CEQA. The proposed project is described in Chapter 2, "Project Description," and evaluated throughout this Initial Study and therefore is not discussed below.

5.1.1 Alternative 1: No Project Alternative

Under the No Project Alternative, FSSD would continue to operate the existing Suisun Force Main at the existing location and the force main would be replaced or repaired if a leak or failure occurs. No excavation and installation of new pipes would occur. With this alternative, construction-related impacts associated with the project would not occur; however, emergency construction activities could be necessary in the event of pipeline failure. The inspection and maintenance requirements for the existing force main would continue to increase as the force main ages and nears the end of its useful life, resulting in increased costs and FSSD staff time. Continued use of the force main would also have increased risk for failure with potential environmental and public health hazards, and potential traffic and community impacts resulting from construction of temporary facilities to mitigate sewer service interruptions.

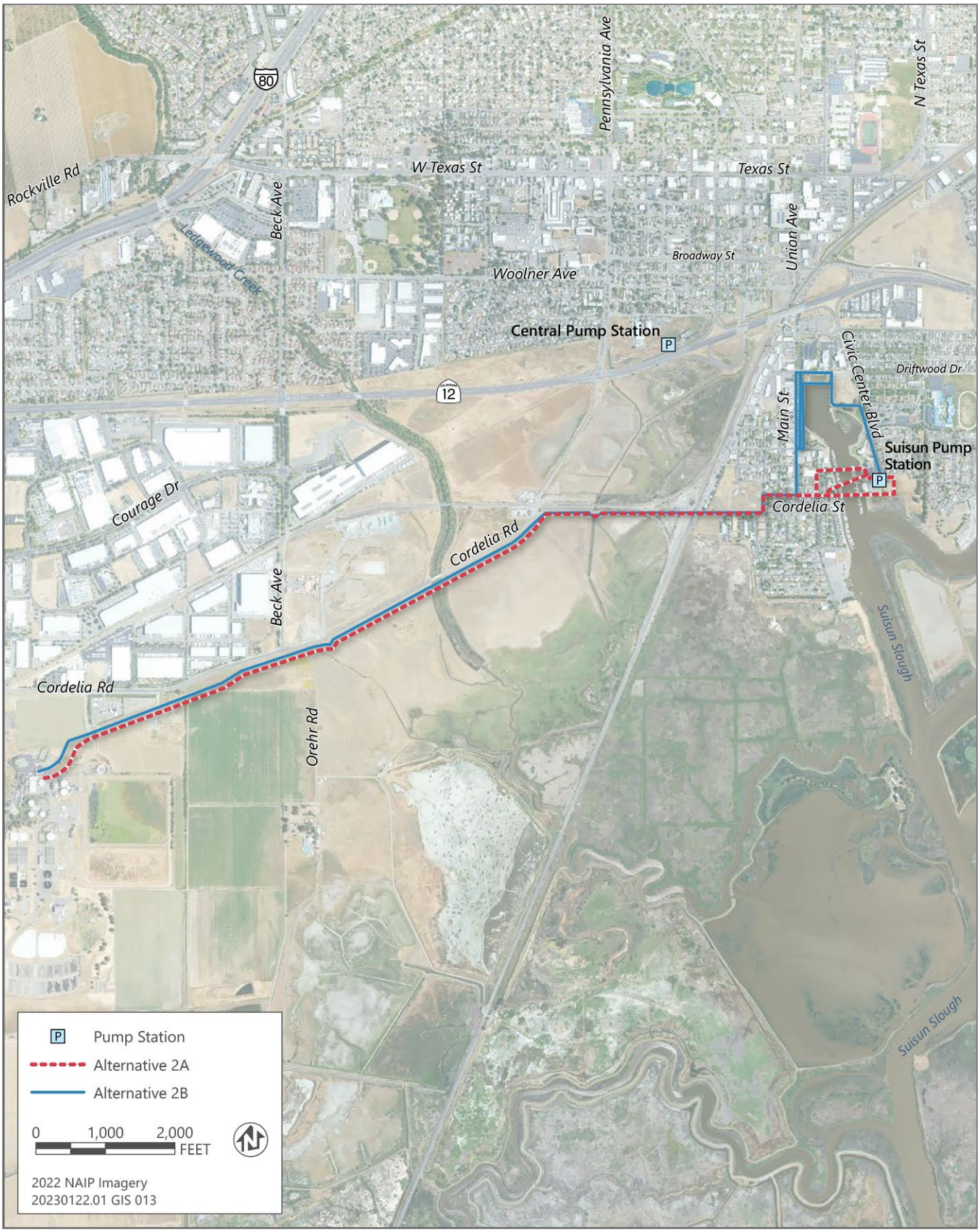
The No Project Alternative would not achieve any of the project objectives, would result in greater potential for service interruptions including leaks or pipeline failure resulting in discharge of raw sewage and would result in increased maintenance costs.

5.1.2 Alternative 2: Alternative Alignments

Several alignment alternatives were identified early in the process and evaluated for feasibility (Figure 5-1). Based on this evaluation, the alignments were refined to three alignments for further evaluation, which included the proposed project evaluated in Chapter 2, "Project Description." The following discussion includes an evaluation of the other two alternatives considered.

ALTERNATIVE 2A - SUISUN PUMP STATION TO THE WASTEWATER TREATMENT PLANT UNDER SUISUN SLOUGH

The pipeline alignment that would travel under Suisun Slough would involve construction of approximately 12,290 feet of pipeline in a new alignment from Suisun Pump Station directly to the wastewater treatment plant (WWTP) by crossing the Suisun Slough via trenchless methods (e.g., microtunneling). This alternative provides the most direct route from Suisun Pump Station to the WWTP, thereby reducing community disruption and providing more favorable hydraulics. It would also have a shorter construction duration compared to the proposed project and would avoid transit center impacts. This alternative alignment would meet most of the project objectives; however, crossing Suisun Slough would not minimize impacts to sensitive natural communities and construction-related impacts related to road closures would be greater under this alternative compared to the proposed project. The Suisun Slough crossing would be the longest, deepest, and most complex of the trenchless crossings.



Source: Adapted by Ascent Environmental in 2024.

Figure 5-1 Alternatives

ALTERNATIVE 2B - SUISUN PUMP STATION TO WWTP AROUND SUISUN SLOUGH

The pipeline alignment that would travel around Suisun Slough would involve construction of approximately 17,650 feet of pipeline in a new alignment from Suisun Pump Station directly to the WWTP by traversing the perimeter of the Suisun Slough. This alternative would reduce the risk by eliminating the Suisun Slough trenchless crossing. This alternative would also reduce impacts to residences compared to the proposed project. This alignment is more direct to the WWTP than the proposed project and would avoid impacts to the transit center. This alternative alignment would meet most of the project objectives; however, it would require additional road closure through residential areas and would have less favorable hydraulics compared to the project because of the increased length of the pipeline.

5.1.3 Alternative 3: Rehabilitate Existing Force Main

An alternative involving rehabilitation of the existing force main rather than replacing it was also considered. Both cured-in-place pipe (CIPP) liners and sliplining were considered for rehabilitation of the existing force main. Each of these rehabilitation methods is described in more detail below.

CURED-IN-PLACE PIPE

The CIPP Alternative would involve the inverting or pulling-in of a resin-impregnated felt tube through the existing force main, and then curing the material with either heated water, steam, or ultraviolet light. The resin reacts and hardens in place, creating a structurally independent "pipe-within-a-pipe." To insert the CIPP liner into the force main, insertion pits approximately 5-foot by 5-foot would need to be excavated at strategic locations along the pipeline alignment.

While the CIPP Alternative would reduce construction-related impacts due to less open trenching, it would require sewer bypass pumping/dewatering, and therefore would ultimately result in a similar level of impact compared to the and proposed project. Because it is typically not feasible to line bends that are 45-degrees or greater due to increased likelihood of wrinkling, these bends in the force main would need to be removed and replaced. While this can be accomplished for the horizontal bends less than 45 degrees, there are several vertical bends along the alignment that are not accessible and therefore cannot be excavated, significantly increasing risk and/or making it infeasible to CIPP line portions of the force main. In addition, this alternative would not meet the project objective to provide greater operational flexibility.

SLIPLINING

The Sliplining Alternative would involve insertion of a new smaller diameter pipeline through the existing force main. The space between the liner and the host pipe would be grouted to prevent leaks. To insert the liner into the force main, insertion pits ranging from 10-foot by 10-foot to 25-foot by 40-foot would need to be excavated at strategic locations along the pipeline alignment.

While the Sliplining Alternative would reduce construction-related impacts due to less open trenching, it would require sewer bypass pumping/dewatering and therefore would ultimately result in a similar level of impact compared to the proposed project. Furthermore, it would reduce the inside diameter of the pipeline and thereby reduce the hydraulic capacity of the force main. Because pipeline bends cannot be sliplined, they would typically be excavated and removed and replaced. While this can be accomplished for the horizontal bends, there are several vertical bends along the alignment which are not accessible and therefore cannot be excavated, making sliplining infeasible for portions of the force main. In addition, this alternative would not meet the project objective to provide greater operational flexibility.

5.2 SUMMARY

In summary, the proposed project would achieve all of the project objectives, and all potentially significant impacts would be reduced to less than significant with mitigation. Because all of the alternatives discussed above either do not meet all of the project objectives or result in greater environmental impacts compared to the proposed project, the proposed project as described in Chapter 2, "Project Description," was selected as the preferred alternative.

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Appendix A

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

CEQA and the State CEQA Guidelines (PRC Section 21081.6 and State CEQA Guidelines Sections 15091[d] and 15097) require public agencies "to adopt a reporting and monitoring program for changes to the project which it has adopted or made a condition of project approval to mitigate or avoid significant effects on the environment." A Mitigation Monitoring and Reporting Program (MMRP) is required for the proposed project because the Initial Study (IS) identifies potential significant adverse impacts related to the project implementation, and mitigation measure have been identified to reduce those impacts. Adoption of the MMRP would occur along with approval of the proposed project.

PURPOSE OF MITIGATION MONITORING AND REPORTING PROGRAM

This MMRP has been prepared to ensure that all required mitigation measures are implemented and completed in a satisfactory manner prior to implementation of the proposed ordinance. The attached table has been prepared to assist the responsible parties in implementing the mitigation measures. The table identifies the impact, mitigation measures, monitoring responsibility, mitigation timing, and provides space to confirm implementation of the mitigation measures. The numbering of mitigation measures follows the numbering sequence found in the IS. Mitigation measures that are referenced more than once in the IS are not duplicated in the MMRP table.

ROLES AND RESPONSIBILITIES

Unless otherwise specified herein, the Fairfield-Suisun Sewer District (FSSD) is responsible for directing all actions necessary to implement the mitigation measures under its jurisdiction according to the specifications provided for each measure and for demonstrating that the action has been successfully completed.

Inquiries should be directed to:

Karl Ono, P.E.
1010 Chadbourne Road
Fairfield, CA 94534
Phone: (707) 428-9129
Email: kono@fairfieldsuisunsewer.ca.gov

The location of this information is:

Fairfield-Suisun Sewer District
1010 Chadbourne Road
Fairfield, CA 94534

FSDD is responsible for overall administration of the MMRP and for verifying that FSSD staff members and all contractors have completed the necessary actions for each measure.

REPORTING

FSSD will document and describe the compliance of the activity with the required mitigation measures either within the attached table or a separate monitoring documentation as part of implementing the proposed project.

MITIGATION MONITORING AND REPORTING PROGRAM TABLE

The categories identified in the attached MMRP table are described below.

- Mitigation Measure – This column provides the verbatim text of the adopted mitigation measure.
- Implementation Responsibility – This column identifies the party responsible for implementing the mitigation measure.
- Timing – This column identifies the time frame in which the mitigation will be implemented.
- Verification – This column is to be dated and signed by the person (either project manager or his/her designee) responsible for verifying compliance with the requirements of the mitigation measure.

Mitigation Monitoring and Reporting Program

Mitigation Measures	Implementation Responsibility	Timing	Verification
Air Quality			
Mitigation Measure 3.3-1: Implement the Bay Area Air Quality Management District's Basic Best Management Practices for Construction-Related Fugitive Dust Emissions Prior to the issuance of contract documents, FSSD will ensure that BAAQMD's basic construction mitigation measures from Table 5-2 of the BAAQMD 2022 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents. These basic construction mitigation measures include the following: 1) All exposed surfaces (e.g., unpaved parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3) All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4) All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). 5) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6) All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. 7) All trucks and equipment, including their tires, shall be washed off prior to leaving any unpaved areas. 8) Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel. 9) A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.	FSSD/Construction contractor	1. (Contracting) Confirm that contract documents include Best Management Practices. 2. (Construction) Verify that basic construction mitigation measures are implemented during project construction.	1. _____ 2. _____
Biological Resources			
Mitigation Measure 3.4-1: Avoid Disturbance of Swainson's Hawk, White-tailed kite, and Other Nesting Raptor Nests ▶ For project activities that begin between March 1 and September 15, including tree removal, qualified biologists will conduct preconstruction surveys for Swainson's hawk and other nesting raptors (including white-tailed kite) to identify active nests in and within 0.5 mile of	FSSD/Qualified biologist/Construction contractor	1. (Preconstruction) Conduct preconstruction surveys.	1. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
the project area. The surveys will be conducted before the beginning of any construction activities (including vegetation removal) between March 1 and September 15, following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000). ▶ Impacts to nesting Swainson's hawks and other raptors will be avoided by establishing appropriate buffers around active nest sites identified during preconstruction raptor surveys. No project activity will commence within the buffer areas until a qualified biologist has determined, in coordination with California Department of Fish and Wildlife (CDFW), the young have fledged, the nest is no longer active, or reducing the buffer would not likely result in nest abandonment. CDFW guidelines recommend implementation of 0.25-mile-wide buffers for Swainson's hawks and 500-feet for other raptors, but the size of the buffer may be adjusted if a qualified biologist and FSSD, in consultation with CDFW, determine that such an adjustment would not be likely to adversely affect the nest. Monitoring of the nest by a qualified biologist during and after construction activities will be required if the activity has potential to adversely affect the nest. ▶ All workers involved in the clearing of vegetation or other construction activities associated with construction of the proposed project will participate in a training session led by a qualified biologist prior to initiation of work. This training session will include information on the ecology and identification of special-status plant and wildlife species likely to occur in the project area. The training will also include information related to the federal Endangered Species Act and California Endangered Species Act and penalties associated with harm done to an individual of a listed species and the need to stop work and inform the on-site biologist in the event of a potential sighting.		2. (Construction) Implement buffers around nests (if needed) and conduct worker awareness training.	2. _____
Mitigation Measure 3.4-2: Avoid or Mitigate for Loss of Special-status Plants FSSD will implement the following measures to reduce potential impacts on special-status plants: ▶ Prior to project initiation and during the blooming period for the special-status plant species with potential to occur in the project area, a qualified botanist will conduct protocol-level surveys for special-status plants in areas where potentially suitable habitat would be removed or disturbed by project activities. Table 3.4-3 summarizes the typical blooming periods for special-status plant species with potential to occur on the project area. ▶ If no special-status plants are found, the botanist will document the findings in a letter report to FSSD and no further mitigation will be required. ▶ If special-status plant species are found that cannot be avoided during construction, FSSD will consult with CDFW and/or US Fish and Wildlife Service (USFWS), as appropriate depending on species status, to determine the appropriate mitigation measures for direct and indirect impacts that could occur because of project construction and will	FSSD/Qualified botanist/Construction contractor	1. (Preconstruction) Conduct preconstruction surveys and consult with CDFW/USFWS if special-status plants are identified during surveys. 2. (Construction) Avoid and/or mitigate for impacts to special-status plants as needed. 3. (Post-construction) Monitor mitigation for special-status plants, if needed.	1. _____ 2. _____ 3. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
implement the agreed-upon mitigation measures to achieve no net loss of occupied habitat or individuals. Mitigation measures may include preserving and enhancing existing populations, creation of off-site populations on project mitigation sites through seed collection or transplantation, and/or restoring or creating suitable habitat in sufficient quantities to achieve no net loss of occupied habitat and/or individuals. Potential mitigation sites could include suitable locations on FSSD lands outside of the project area. A mitigation and monitoring plan will be developed describing how unavoidable losses of special-status plants will be compensated. ▶ If relocation efforts are part of the mitigation plan, the plan will include details on the methods to be used, including collection, storage, propagation, receptor site preparation, installation, long-term protection and management, monitoring and reporting requirements, success criteria, and remedial action responsibilities should the initial effort fail to meet long-term monitoring requirements. Success criteria for preserved and compensatory populations will include: ▶ The extent of occupied area and plant density (number of plants per unit area) in compensatory populations will be equal to or greater than the affected occupied habitat. Compensatory and preserved populations will be self-producing. Populations will be considered self-producing when: ▶ plants reestablish annually for a minimum of 5 years with no human intervention such as supplemental seeding; and ▶ reestablished and preserved habitats contain an occupied area and flower density comparable to existing occupied habitat areas in similar habitat types in the project vicinity. If offsite mitigation includes dedication of conservation easements, purchase of mitigation credits, or other off-site conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, success criteria such as those listed above and other details, as appropriate to target the preservation of long-term viable populations.			
Mitigation Measure 3.4-3: Avoid or Minimize Impacts on Northwestern Pond Turtle FSSD will implement the following measures to reduce potential impacts on northwestern pond turtle: ▶ Pre-construction surveys for northwestern pond turtle will be conducted by a qualified biologist 14 days before and 24 hours before the start of ground-disturbing activities (including vegetation removal) where suitable habitat exists (e.g., along seasonal wetlands and freshwater emergent wetlands).	FSSD/Qualified biologist/Construction contractor	1. (Preconstruction) Conduct preconstruction surveys. 2. (Construction) On-site monitoring for Northwestern pond turtle, establish buffers around pond turtle nests, install exclusion fencing around wetlands.	1. _____ 2. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
▶ If northwestern pond turtles or their nests are observed during pre-construction surveys, a qualified biologist will be on-site to monitor construction in suitable northwestern pond turtle habitat. Northwestern pond turtles found within the construction area will be allowed to leave of their own volition or will be captured by a qualified biologist and relocated out of harm's way to the nearest aquatic habitat suitable for the species immediately upstream or downstream from the project site. ▶ If northwestern pond turtle nests are identified in the work area during pre-construction surveys, a 300-foot no disturbance buffer shall be established between the nest and any areas of potential disturbance. Buffers will be clearly marked with temporary fencing. Construction will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest and made it safely to aquatic habitat outside the work area or the nest is deemed inactive by a qualified biologist. ▶ Wetland habitat outside of the proposed disturbance area will be protected with exclusion fencing to ensure that individual northwestern pond turtles do not wander into the work area during the construction period. The fence will be established in all areas subject to construction disturbance after removal of vegetation as described below. Exclusion fencing will be installed outside of wetland boundaries unless wetland work is expressly permitted by the resource agencies (e.g., US Army Corps of Engineers (USACE), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), CDFW). Exclusion fencing will be made of a material that does not allow small mammals or turtles to pass through, such as a properly installed silt fence or other material (e.g., plastic or metal) so that the outside is too smooth to be climbed, and will be buried at least 6 inches below the ground surface and extend a minimum of 2 feet above ground. The fence should include scape funnels that allow animals to leave the construction area but not return. The final design and proposed location of the fencing will be submitted to CDFW for review and approval prior to installation. ▶ Prior to installation of the exclusion fence described above, efforts will be made to ensure that northwestern pond turtles are not present in wetland areas or immediately adjacent uplands subject to potential impact from vegetation removal or construction activities. Prior to removal of vegetation, a qualified biologist will walk the work zone to ensure no northwestern pond turtles are present. Vegetation will be removed using hand tools, such as weed-whackers, from all construction areas within 50 feet of wetland habitat. Immediately after vegetation removal is complete and no evidence of western pond turtle presence is observed within the construction zone, the temporary exclusion fencing will be placed around the defined work area prior to the start of construction activities to prevent wildlife from moving into construction areas. A biological monitor approved by CDFW will be present during vegetation clearing and installation of the exclusion fence. Fencing will remain in place throughout the duration of construction and		3. (Construction) Inspect exclusion fencing daily while construction activities are underway and repair fencing within 24 hours of identifying need for repair.	3. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
shall be fully maintained and inspected daily when project activities are underway. Repairs to the fencing will be made within 24 hours of identifying the need for repair. After construction is completed, the fencing will be completely removed.			
Mitigation Measure 3.4-4a: Implement Limited Operating Period during Crotch's Bumble Bee Colony Active Period Because the project area supports foraging and nesting habitat but no overwintering habitat, the following limited operating period will be implemented: ▶ Initial ground disturbing work (e.g., grading, vegetation removal, staging) will take place between August 15 and March 15, if feasible, to avoid impacts on nesting Crotch's bumble bees. If this limited operating period is determined to be infeasible, Mitigation Measure 3.4-4b will be implemented.	FSSD/Construction contractor	1. (Construction) Implement limited operating period, if feasible.	1. _____
Mitigation Measure 3.4-4b: Conduct Focused Surveys and Implement Avoidance Measures for Crotch's Bumble Bee ▶ A qualified biologist familiar with bumble bees of California and experienced using survey methods for bumble bees will conduct a habitat assessment and focused survey for Crotch's bumble bee before the start of any ground-disturbing activities. Surveys will be performed when Crotch's bumble bee is most likely to be identified, typically from April through August when floral resources and ideal weather conditions are present, and will follow the methods in *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (CDFW 2023) or any subsequent protocol approved by CDFW. FSSD will submit a survey report to CDFW within 1 month of survey completion and notify CDFW within 24 hours if Crotch's bumble bees are detected. If Crotch's bumble bees are detected during the focused survey, appropriate avoidance measures will be implemented. Avoidance measures may include, but not be limited to, the following: ▶ Protective buffers will be implemented around active nesting colonies or overwintering queens until these sites are no longer active. A qualified biologist, in consultation with CDFW, will determine the appropriate buffer size to protect nesting colonies or overwintering queens. ▶ If impacts on Crotch's bumble bee cannot be avoided, the applicant will obtain an incidental take permit (ITP) from CDFW and implement all avoidance measures included in the ITP.	FSSD/Qualified biologist/Construction contractor	1. (Preconstruction) Conduct preconstruction surveys. 2. (Construction) Implement buffers around nesting colonies or queens, if present. Obtain an ITP, if needed.	1. _____ 2. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
Mitigation Measure 3.4-5: Avoid Disturbing Active Bird Nests Including Grasshopper Sparrow, Saltmarsh Common Yellowthroat, Suisun Song Sparrow FSSD or its contractor will implement the following measures to avoid disturbing migratory bird nests including nests of special-status birds: ▶ Vegetation and tree removal activities will be carried out during the nonbreeding season (September 1-January 31) for migratory birds to the degree feasible. If project activities are conducted during the nonbreeding season, no further mitigation will be required. ▶ For construction activities occurring between February 1 and August 31, FSSD or its construction contractor will retain a qualified biologist to conduct preconstruction surveys for nesting birds and to identify active nests on and within 500 feet of the project area. The surveys will be conducted no more than 14 days before the beginning of construction activities that could remove vegetation or otherwise disturb nesting birds. ▶ If active nests are found, the biologist will establish appropriate buffers around the nests. The qualified biologist will determine an adequate buffer for the species and nest. Factors to be considered for determining buffer size include presence of natural buffers provided by vegetation or topography, nest height above ground, baseline levels of noise and human activity, species sensitivity, and proposed project activities. Generally, buffer size for common passerine bird nests will be at least 20 feet. Buffers for special-status bird species' nests will be a minimum of 50 feet unless a qualified biologist in consultation with CDFW determines a reduced buffer will not be likely to adversely affect the nest. No project activity will commence within the buffer area until a qualified biologist confirms that any young have fledged and the nest is no longer active. Monitoring of the nest by a qualified biologist will be required if the activity has the potential to adversely affect the nest. Nest buffers will be increased if the monitoring biologist determines birds within active nests are showing behavioral signs of agitation (e.g., standing up from a brooding position, flying off the nest) during project activities.	FSSD/Qualified biologist/Construction contractor	1. (Preconstruction) Conduct preconstruction surveys. 2. (Construction) Limit vegetation removal to September 1-January 31, if possible. Establish buffers around nests, if present.	1. _____ 2. _____
Mitigation Measure 3.4-6: Develop and Implement a Frac-Out Contingency Plan For the microtunneling component, FSSD will require the contractor to develop a Frac-out Contingency Plan. FSSD will submit the Frac-out Contingency Plan to the appropriate resource agencies (CDFW, SFBRWQCB, USACE, USFWS) for review prior to the start of construction of any pipeline that would use microtunneling in proximity to surface waters. The Frac-out Contingency Plan will be implemented where microtunneling installation under a waterway or unknown substrate canal will occur to avoid, minimize, or mitigate for potential project impacts during microtunneling, as specified in the Frac-out Contingency Plan. The Frac-out Contingency Plan will include, at a minimum:	FSSD/Construction contractor	1. (Preconstruction) Prepare Frac-Out Contingency Plan and submit to resource agencies. Conduct construction worker training. 2. (Construction) Implement Contingency Plan measures as needed during microtunneling including prevention and clean up measures, as needed.	1. _____ 2. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
▶ Measures describing training of construction personnel about monitoring procedures, equipment, materials and procedures in place for the prevention, containment, clean-up (such as creating a containment area and using a pump, using a vacuum truck), and disposal of released bentonite slurry, and agency notification protocols. ▶ Methods for preventing frac-out include maintaining pressure in the borehole to avoid exceeding the strength of the overlying soil. ▶ Methods for detecting an accidental release of bentonite slurry that include: (a) monitoring by a minimum of one biological monitor throughout drilling operations to ensure swift response if a frac-out occurs; (b) continuous monitoring of drilling pressures to ensure they do not exceed those needed to penetrate the formation; (c) continuous monitoring of slurry returns at the exit and entry pits to determine if slurry circulation has been lost; and (d) continuous monitoring by spotters to follow the progress of the drill bit during the pilot hole operation, and reaming and pull back operations. ▶ Protocols that the contractor would follow if there is a loss of circulation or other indicator of a release of slurry. ▶ Cleanup and disposal procedures and equipment the contractor would use if a frac-out occurs. ▶ If a frac-out occurs, the contractor will immediately halt work, implement the measures outlined in the Frac-out Contingency Plan to contain, clean-up, and dispose of the bentonite slurry, and, if the frac-out occurs in the water channel, notify and consult with resource agencies before microtunneling activities can begin again.			
Cultural Resources			
Mitigation Measure 3.5-1: Protect Unanticipated Archaeological Resource Discoveries In the event that a prehistoric archeological site (such as any unusual amounts of stone, bone, or shell) or a historic-period archaeological site (such as concentrated deposits of bottles or bricks, amethyst glass, or other historic refuse), is uncovered during grading or other construction activities, all ground-disturbing activity within 100 feet of the discovery will be halted until a qualified archaeologist can assess the significance of the find. FSSD will be notified by the contractor of the potential find and FSSD will retain a qualified archeologist to investigate its significance. If the find is a prehistoric archeological site, the geographically and culturally affiliated Native American group will be notified. Any previously undiscovered resources found during construction will be recorded on appropriate California Department of Parks and Recreation 523 forms and evaluated for significance under all applicable regulatory criteria. If the archaeologist determines that the find does not meet the CRHR standards of significance for cultural resources, construction may proceed. If the find is determined to be significant by the	FSSD/Qualified archaeologist/Construction contractor	1. (Construction) Halt work in the event of an archaeological discovery. Notify FSSD and FSSD will retain a qualified archaeologist. Notify tribe of prehistoric archaeological sites. Record and determine the significance of the site.	1. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
qualified archaeologist (i.e., because the find is determined to constitute either an historical resource or a unique archaeological resource), the archaeologist shall work with FSSD to follow accepted professional standards such as further testing for evaluation or data recovery, as necessary. If artifacts are recovered from significant historic archaeological resources, they will be housed at a qualified curation facility. The results of the identification, evaluation, and/or data recovery program for any unanticipated discoveries will be presented in a professional-quality report that details all methods and findings, evaluates the nature and significance of the resources, and analyzes and interprets the results.			
Geology and Soils			
Mitigation Measure 3.7-1: Site-Specific Geotechnical Investigation FSSD will have a professional geotechnical engineer conduct a site-specific geotechnical investigation to evaluate the potential for geotechnical hazards to occur on-site in accordance with the recommendations of the California Geological Survey. A geotechnical investigation report will be prepared and will provide site-specific recommendations for the force mains, appurtenant infrastructure, and fill materials in any locations where there is a potential for an elevated risk of geological hazards. The geotechnical investigation report will specify exact design coefficients that are needed by structural engineers to determine the type and sizing of structural and fill materials. Th recommendations will be subject to performance criteria imposed by the California Building Code, as applicable. The geological investigation report will be prepared by a registered civil engineer or certified engineering geologist and include appropriate measures that will be implemented during construction to minimize seismic hazards and ensure structural safety of the proposed force mains and appurtenant infrastructure.	FSSD/Geotechnical engineer	1. (Contracting) Prepare geotechnical investigation. 2. (Construction) Implement measures in geotechnical report, as needed.	1. _____ 2. _____
Noise			
Mitigation Measure 3.13-1: Implement Noise Reduction Measures Prior to initiation of any nighttime construction work, FSSD will apply for and obtain an exception to the permitted work hours, pursuant to Suisun City Code Section 15.04.075. In addition, FSSD or its contractor shall not perform any nighttime construction activity within 250 feet of an existing residential structure.	FSSD/Construction contractor	1. (Preconstruction) Apply for and obtain exception from City for nighttime work. 2. (Construction) Limit nighttime construction to 250 feet or more from residences.	1. _____ 2. _____
Tribal Cultural Resources			
Mitigation Measure 3.18-1: Protect Unanticipated Discoveries of Potential Tribal Cultural Resources If any suspected tribal cultural resources, including midden soil, artifacts, chipped stone, exotic rock (nonnative), or unusual amounts of baked clay, shell, or bone, are discovered during ground-disturbing construction activities, all work will cease within 100 feet of the	FSSD/Construction contractor	1. (Construction) Halt work in the event of an TCR discovery. Notify FSSD and FSSD will notify tribal representative(s). Work with tribe to determine treatment of resource.	1. _____

Mitigation Measures	Implementation Responsibility	Timing	Verification
find. Appropriate tribal representative(s) will be immediately notified and will determine whether the find is a tribal cultural resource (pursuant to PRC Section 21074). If the find is determined to be a tribal cultural resource, the appropriate tribal representative(s) will make recommendations for further evaluation and treatment, as necessary. If the find is determined not to be a tribal cultural resource as defined in PRC Section 21074, construction may proceed. Preservation in place is the preferred alternative under CEQA and the tribes' protocols, and every effort must be made to preserve the resources in place, including through project redesign. Culturally appropriate treatment may be, but is not limited to, processing materials for reburial, minimizing handling of cultural objects, leaving objects in place within the landscape, or returning objects to a location within the project vicinity where they will not be subject to future impacts. Tribes do not consider curation of tribal cultural resources to be appropriate or respectful and request that materials not be permanently curated unless approved by the tribal representative. Treatment that preserves or restores the cultural character and integrity of a tribal cultural resource may include tribal monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or cultural soil (soils containing and surrounding the discovery).			

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Appendix B

Air Quality, Greenhouse Gases Emissions, and Energy Modeling Data

Energy Consumption, Construction

Offroad Heavy-Duty Equipment Energy Consumption

Phase Name	Equipment List	HP	Modeled Equipment	Total Equipment Hours	Horsepower-Hour (hp-hr)	Fuel Usage (gallons/hp-hr)	Fuel (gallons of diesel)
Open cut trench	Dozer	350	Rubber Tired Dozers	2968	1038800	0.0446308	46,362
	Front Loader	300	Rubber Tired Loaders	2968	890400	0.0502187	44,715
	Dump Truck	300	Off-Highway Trucks	5936	1780800	0.0497004	88,507
	Crane	400	Cranes	1484	593600	0.0518272	30,765
	Compactor	300	Rollers	2968	890400	0.0514601	45,820
	Paver	300	Pavers	742	222600	0.0503954	11,218
	Excavator	350	Excavators	2968	1038800	0.0500564	51,999
	HDPE Fusion Machine	25	Other Construction Equipment	1484	37100	0.0497556	1,846
Trenchless	Dump Truck	300	Off-Highway Trucks	88	26400	0.0497004	1,312
	Cranes	400	Cranes	264	105600	0.0518272	5,473
	Mud Mixing Plant*	50	Other Construction Equipment	352	17600	0.0497556	876
	Microtunneling Machine*	300	Other Construction Equipment	352	105600	0.0497556	5,254
	HDPE Fusion Machine*	25	Other Construction Equipment	88	2200	0.0497556	109
							334,255

Phase Name	Equipment List	HP	Modeled Equipment	Total Equipment Hours	KW	Electricity (KWh)
Trenchless	Slurry Seperation Plant	50	Other Construction Equipment	352	36.775	12,945
All	Signal Boards	6	Signal Boards	3710	4.413	16,372
	Conversion	0.7355	kWatts/hp			

Notes:

Data queried from OFFROAD 2021.

* The average fuel efficiency of other heavy-duty equipment with equal or higher horsepower is used for a conservative estimate of equipment without specific data or energy consumption type,

Onroad Energy Consumption

Trip Type	Fleet	Total VMT	Gallons of Gasoline	Gallons of Diesel	KWh of Electricity
Export (soil/waste)	HHDT	59,667	-	9,905	-
Import (soil/fill)	HHDT	47,889	-	7,950	-
Tree Export/Import	HHDT	600	-	100	-
Worker Commute	LDA,LDT1,LDT2	104,177	3,842	3,524	40,221
			3,842	21,479	40,221

Notes: Assume haul trucks and vendor trucks are all diesel-fueled.

Consistent with CalEEMod, worker vehicles assumed to 25% LDA, 50% LDT1, and 25% LDT2.

Worker commute energy use in fleet is based on EMFAC statewide dataset for year 2026.

Project Grand Total

Gallons of Gasoline	Gallons of Diesel	KWh of Electricity
3,842	**355,734**	**69,538**

On-Road Fuel Consumption Rates

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Air District
Region: Bay Area AQMD
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Energy Consumption	Fuel Consumption	Gallons per mile	KWh per mile
Bay Area	2026	HHDT	Aggreg	Aggreg	Gasoline	16.67019	1732.9877	1732.9877	0	333.537197	0	0.44680527	0.258	
Bay Area	2026	HHDT	Aggreg	Aggreg	Diesel	37718.54	4322320.6	4322320.6	0	554032.375	0	717.551279	0.166	
Bay Area	2026	HHDT	Aggreg	Aggreg	Electricity	441.2799	46675.091	0	46675.091	5841.04067	86055.50051	0		1.844
Bay Area	2026	HHDT	Aggreg	Aggreg	Natural Ga	3518.306	231969.25	231969.25	0	32124.1924	0	44.8626915	0.193	
Bay Area	2026	LDA	Aggreg	Aggreg	Gasoline	2201974	79971702	79971702	0	10194551.5	0	2550.48907	0.032	
Bay Area	2026	LDA	Aggreg	Aggreg	Diesel	7333.287	198341.49	198341.49	0	30733.9405	0	4.54907636	0.023	
Bay Area	2026	LDA	Aggreg	Aggreg	Electricity	197142.8	8635854.6	0	8635854.6	961930.127	3334152.612	0		0.386
Bay Area	2026	LDA	Aggreg	Aggreg	Plug-in Hyb	72207.17	3088502.4	1465289	1623213.5	298576.662	490258.8443	49.2710011	0.034	0.302
Bay Area	2026	LDT1	Aggreg	Aggreg	Gasoline	206448.6	6642983.3	6642983.3	0	915152.889	0	254.414063	0.038	
Bay Area	2026	LDT1	Aggreg	Aggreg	Diesel	90.05015	1032.1606	1032.1606	0	246.654954	0	0.04260891	0.041	
Bay Area	2026	LDT1	Aggreg	Aggreg	Electricity	871.7515	36376.203	0	36376.203	4192.27976	14044.21681	0		0.386
Bay Area	2026	LDT1	Aggreg	Aggreg	Plug-in Hyb	510.9876	23454.826	10006.806	13448.02	2112.93385	4061.702868	0.33745945	0.034	0.302
Bay Area	2026	LDT2	Aggreg	Aggreg	Gasoline	1129979	41309843	41309843	0	5288581.59	0	1612.52092	0.039	
Bay Area	2026	LDT2	Aggreg	Aggreg	Diesel	4539.433	166790.51	166790.51	0	21379.6423	0	4.97267603	0.03	
Bay Area	2026	LDT2	Aggreg	Aggreg	Electricity	10495.53	350457.17	0	350457.17	53110.1884	135305.3911	0		0.386
Bay Area	2026	LDT2	Aggreg	Aggreg	Plug-in Hyb	11644.82	507566.57	227374.68	280191.89	48151.3171	84626.30071	7.70369527	0.034	0.302
Bay Area	2026	MHDT	Aggreg	Aggreg	Gasoline	6383.175	335421.7	335421.7	0	127714.575	0	69.0414794	0.206	
Bay Area	2026	MHDT	Aggreg	Aggreg	Diesel	48424.7	1991810.5	1991810.5	0	577276.636	0	233.332145	0.117	
Bay Area	2026	MHDT	Aggreg	Aggreg	Electricity	733.301	38823.789	0	38823.789	9399.84304	42488.21397	0		1.094
Bay Area	2026	MHDT	Aggreg	Aggreg	Natural Ga	527.3539	24253.105	24253.105	0	4944.86071	0	3.37724465	0.139	

Onroad Energy Efficiency

Fleet	Gasoline (gallon/mi)	Diesel (gallon/mi)	Electricity (KWh/mi)
LDA,LDT1,l	0.036880877	0.03382801	0.386082534
MHDT	0.205834865	0.117145755	1.094386076
HHDT	0.257823678	0.166010656	1.843713606

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 25% LDA, 50% LDT1, and 25% LDT2.

OFFROAD Fuel Consumption Rates

Model Output: OFFROAD2021 (v1.0.7) Emissions Inventory
Region Type: Air District
Region: Bay Area AQMD
Calendar Year: 2026
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy
Bay Area	2026	Construction and Mining - Cranes	Aggregate	600	Diesel	211792.718	33756.5883	128.020956	4086518.163
Bay Area	2026	Construction and Mining - Excavators	Aggregate	600	Diesel	1195250.58	166872.765	251.582944	23878080.78
Bay Area	2026	Construction and Mining - Off-Highway Trucks	Aggregate	300	Diesel	128698.274	29661.2119	40.3586985	2589480.419
Bay Area	2026	Construction and Mining - Pavers	Aggregate	300	Diesel	97912.6453	20306.9989	36.3574047	1942887.092
Bay Area	2026	Construction and Mining - Rubber Tired Dozers	Aggregate	600	Diesel	96653.9913	13889.8306	25.6588974	2165635.09
Bay Area	2026	Construction and Mining - Rubber Tired Loaders	Aggregate	300	Diesel	1187616.98	291426.988	413.310485	23648880.55
Bay Area	2026	Construction and Mining - Rollers	Aggregate	300	Diesel	33692.0562	7708.99555	17.0038683	654722.1144

Equipment Specific Fuel Consumption

Equipment	Gallons per Horsepower-hour
Cranes	0.0518
Excavators	0.0501
Off-Highway Trucks	0.049700424
Pavers	0.050395438
Rubber Tired Dozers	0.044630784
Rubber Tired Loaders	0.05021874
Rollers	0.051460086
Other Construction Eq	0.0498

Note: Due to lack of data, fuel efficiency for "Other Construction" is conservatively esitmated as the average of other heavy-duty equipment.

Construction Emissions Summary - Conformity Analysis

Table X. Conformity Analysis Result

Year	Tons/year			
	ROG	NOx	PM10 (total)	PM2.5 (total)
Year 1	0.29	2.3	1.9	0.4
Year 2	0.30	2.4	2.1	0.4
De Minimis Thresholds	25	25	n/A	100
Exceed?	No	No	No	No

Notes: ROG = Reactive Organic Gases; NOx = Oxides of Nitrogen; CO = Carbon Monoxide; PM_{10} = Particulate matter 10 micrometers or less in diameter; $PM_{2.5}$ = Fine particulate matter. Totals may not sum due to rounding.

Year 1 = 2026

Mass Emission by Year and Sources

Emission Source	Emission (lbs)					
	ROG	NOx	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)	PM_{10} (dust)	$PM_{2.5}$ (dust)
Year 1						
Heavy-Duty Equipment	545.76	4250.30	174.35	160.00	3545.64	531.85
Mobile Sources (worker commute, haul trucks)	33.79	390.28	16.97	16.23	54.44	8.81
Total	579.55	4640.58	191.32	176.24	3600.08	540.65
Year 2						
Heavy-Duty Equipment	553.09	4267.85	169.13	155.18	3894.00	584.10
Mobile Sources (worker commute, haul trucks)	37.84	437.11	19.01	18.18	60.97	9.86
Total	590.93	4704.96	188.14	173.36	3954.97	593.96

Table X. Average Daily Emissions of Criteria Air Pollutants

Emission Source	Average Daily Emissions (lbs/day)			
	ROG	NOx	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)
Year 1				
Heavy-Duty Equipment	3.1	24.3	1.0	0.9
Mobile Sources (worker commute, haul trucks)	0.2	2.2	0.1	0.1
Total	3.3	26.5	1.1	1.0
Year 2				
Heavy-Duty Equipment	2.8	21.8	0.9	0.8
Mobile Sources (worker commute, haul trucks)	0.2	2.2	0.1	0.1
Total	3.0	24.0	1.0	0.9
Thresholds of Significance	**54**	**54**	**82**	**54**
Exceed?	No	No	No	No

Table X. GHG Yearly Emissions

Year	CO2e (MTs)
1	718
2	840
Project total	1,558

Construction Emissions Detail

Onsite Emissions

Exahust

Off-Road Equipment

Construction Year	Emission (lb) ROG	NOx	PM10E	PM2.5E	CO2e (MT/yr)
1	545.76	4250.30	174.35	160.00	608
2	553.09	4267.85	169.13	155.18	730

Fugitive

Off-Road Equipment

Construction Year	PM10 lb	PM2.5 lb	
1	3,545.64	531.85	BMP
2	3,894.00	584.10	BMP

Offsite Emissions

Exahust

Mobile On-road

Construction Year	ROG lb	NOx lb	PM10_Ex lb	PM2.5_Ex lb	PM10_D* lb	PM2.5_D* lb	CO2e MT
1	33.79	390.28	16.97	16.23	14.74	4.68	110
2	37.84	437.11	19.01	18.18	16.51	5.24	110

Note:

* Dust emissions include breakwear, tirewear only.

Fugitive

Mobile On-road

Construction Year	PM10 lb	PM2.5 lb
1	39.70	4.13
2	44.46	4.63

Dust Mitigation

61% Reduction in fugitive dust emission from vehicle traveling on unpaved road by watering twice daily.

55% Reduction in fugitive dust emission from grading, bulldozing and truck loading by watering exposed area twice daily.

Construction Input Parameters

Construction Input Parameters

Item	Value	Unit	
Earliest Start Year	2026	year	
Daily schedule	10	hours/day	7a-5p
Weekly Schedule	5	days/week	
Total duration	371	work days	
Total Years	1.43	calendar years	
OnRoad VMT			
Worker Commute Trip Length	11.7	miles	Caleemod Default Bay Area AQMD
Number of Workers	12	persons	10 onsite construction worker + 2 flag persons
Material Export			
Distance			
Off-Haul (soil/waste) Distance (one-way)	15	miles	
Off-Haul (Trees/Veg.) Distance	0	miles	
Quantity			
Material Export (Off-Haul) Quantity	19,889	cy	
Tree Removal (Off-Haul) Quantity		trees	
Material Import			
Distance			
Soil/Fill Source Site Distance (one-way)	15	miles	
Construction Materials/Supplies Distance (one-way)		miles	
Quantites			
On-Haul (Soil/Fill) Quantity	15,963	cy	
On-Haul (Materials/Supplies) Quantity	0	Total truck deliveries	
On-Haul (Trees/Veg.) Quantity	0	#trees	
Onsite stockpiling Quantity	0	cy	
Truck Capacity			
On/Off - Haul (Soil/Fill/Waste) Truck Capacity	10	cy	
Concrete Truck Capacity	10	cy	
Vendor Import Truck Capacity	25	tons/truck	

Construction Trip and VMT calculation

Trip Purpose	Phase	Workdays/phase	Load Capacity (tons)	# One-way Trips	One-way Trip Length (mi)	Daily trips	Number of Vehicles	Percent (%) of travel on paved road	Total VMT (Unpaved Road)	Total VMT (Paved Road)
Export (soil/waste)	1	371	12.825	3,978	15	10.72	1	100	0	59,667
Import (soil/fill)	1	371	12.825	3,193	15	8.61	1	100	0	47,889
Tree Export/Import	1	371	20.25	40	15	0.11	1	100	0	600
Worker Commute	1 & 2	371	NA	8904	11.7	24	12	100	0	104,177

Assumptions:

Worker commute trip rate	1	round trips/worker/day	
Mature tree weight	2	tons/tree	https://thetimberlandinvestor.co
Topsoil (packed)	2,565	lb/CY	https://www.trorc.org/wp-content/uploads/2022/01/Cubic_Yardage_Chart-D.pdf

Construction Phases and Years

Number of workdays breakdown as phase percent by year

Phase	Start Date	End Date	# Workdays	Proportion of Project	Year 1	Year 2
1	5/1/2026	10/1/27	371	0.89	0.47	0.53
2	8/1/26	10/1/26	44	0.11	1	0

Off-Road Equipment Exhaust Emissions

Equipment and hours provided									Modeled Equipment	Hours per Phase	CalEEMod Default Diesel Fueled Offroad Equipment Emission Factors (g/hp-hr)										Mass Emissions (lb)										GHG Emission (MT)
Phase Start	Phase End	Phase Name	Equipment List	Equipment #	HP	Hr/Day	Days of Phase	Load Factor			TOG	ROG	NOX	CO	SO2	PM10E	PM2.5E	CO2	CH4	N2O	CO2e	TOG	ROG	NOX	CO	SO2	PM10E	PM2.5E	CO2	CH4	N2O	CO2e
5/1/2026	10/1/2027	Open cut trench	Dozer	1	350	8	371	0.4	Rubber Tired Dozers	2968	0.42	0.35	3.22	2.73	0.01	0.142	0.131	533	0.02	0	534	2.59	323	2952	2497	4.58	130.1	120	487850	20.2	3.66	221.89
			Front Loader	1	300	8	371	0.36	Rubber Tired Loaders	2968	0.22	0.19	1.3	1.24	0.01	0.049	0.045	527	0.02	0	529	1.17	132	921	873	3.53	34.63	31.8	372560	14.8	2.83	169.57
			Dump Truck	2	300	8	371	0.38	Off-Highway Trucks	5936	0.21	0.18	1.01	1.18	0.01	0.036	0.033	529	0.02	0	531	2.21	263	1508	1757	7.46	53.71	49.23	789454	31.3	5.97	359.33
			Crane	1	400	4	371	0.29	Cranes	1484	0.24	0.2	1.84	1.64	0.01	0.075	0.069	527	0.02	0	529	0.83	75.1	697	621	1.9	28.46	26.19	200178	7.97	1.52	91.06
			Compactor	1	300	8	371	0.38	Rollers	2968	0.18	0.15	1.45	1.44	0.01	0.051	0.046	529	0.02	0	531	0.93	110	1083	1072	3.73	38.04	34.31	394559	15.7	2.98	179.66
			Paver	1	300	2	371	0.42	Pavers	742	0.12	0.1	0.89	0.98	0.01	0.031	0.028	527	0.02	0	529	0.16	21.4	184	202	1.03	6.39	5.77	108678	4.33	0.82	49.46
			Excavator	1	350	8	371	0.38	Excavators	2968	0.14	0.11	0.68	1.05	0.01	0.024	0.022	527	0.02	0	529	0.84	99.2	593	909	4.35	20.89	19.15	458761	18.3	3.48	208.82
			HDPE Fusion Machine	1	25	4	371	0.42	Other Construction Equipment	1484	0.81	0.68	4.08	4.69	0.01	0.231	0.212	589	0.02	0.01	592	0.18	23.4	140	161	0.17	7.94	7.28	20249.7	0.82	0.17	9.22
8/1/2026	10/1/2026	Trenchless	Dump Truck	1	300	2	44	0.38	Off-Highway Trucks	88	0.21	0.18	1.01	1.18	0.01	0.036	0.033	529	0.02	0	531	0.03	3.89	22.4	26.1	0.11	0.8	0.73	11703.5	0.46	0.09	5.33
			Cranes	3	400	2	44	0.29	Cranes	264	0.24	0.2	1.84	1.64	0.01	0.075	0.069	527	0.02	0	529	0.15	13.4	124	111	0.34	5.06	4.66	35611.2	1.42	0.27	16.2
			Slurry Seperation Plant	1	50	8	44	0.42	Other Construction Equipment	352	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Mud Mixing Plant	1	50	8	44	0.42	Other Construction Equipment	352	1.37	1.15	9.82	4.74	0.01	0.756	0.695	523	0.02	0	524	0.14	18.7	160	77.3	0.08	12.32	11.33	8517.89	0.34	0.07	3.87
			Microtunneling Machine	1	300	8	44	0.42	Other Construction Equipment	352	0.18	0.15	1.28	1.24	0.01	0.048	0.044	529	0.02	0	530	0.11	14.6	125	121	0.49	4.69	4.3	51678.5	2.05	0.39	23.51
			HDPE Fusion Machine	1	25	2	44	0.42	Other Construction Equipment	88	0.81	0.68	4.08	4.69	0.01	0.231	0.212	589	0.02	0.01	592	0.01	1.39	8.32	9.55	0.01	0.47	0.43	1200.79	0.05	0.01	0.55
																				Total		1099	8518	8438	28	343	315	2941001	118	22	1338

Notes:
The equipment emission factors are queried from CalEEMod 2022 Appendix G Table G-11 based on provided horsepower values. Loading factors are from CalEEMod default diesel-fueled equipment loading factors (Sheet Default HP LF).

Onsite Off-road Equipment by Phase

Phase	Phase Total Mass Emissions (lb)					GHG (MT)	Workdays
	ROG	NOx	PM10E	PM2.5E	CO2e		
1	1046.9	8078.43	320.14	293.73	1289.01	371	
2	51.93	439.72	23.34	21.45	49.46	44	

Onsite Off-road Equipment by Phase and Year

Phase	Year	Weight	Daily Average resolved by Year				CO2e (MT/yr)
			ROG	NOx	PM10E	PM2.5E	
1	1	0.47	2.82	21.77	0.86	0.79	608.02
1	2	0.53	2.82	21.77	0.86	0.79	681
2	2	1.00	1.18	9.99	0.53	0.49	49.46

Onsite Off-road Equipment Daily Average Emissions by Year

Year	Daily Average by Year (lb/day)				CO2e (MT/yr)
	ROG	NOx	PM10E	PM2.5E	
1	2.82	21.77	0.86	0.79	608
2	4.00	31.77	1.39	1.28	730

On-Road Truck Haul Exhaust Emissions

Phases	Trip Purpose	Total One-way Trips	One-way Trip Length (mi)	Total VMT	Total Work Days	Number of Vehicles	Fleet Type*	Fuel	ROG	NOx	PM10_ Ex	PM2.5 Ex	PM10_ D**	PM2.5_ D**	CO2	CH4	N2O	CO2e
									lb	lb	lb	lb	lb	lb	lb	lb	lb	MT
1	Export (soil/waste)	3,978	15	59,670	371	1	HHDT	Diesel	6.3	311.9	3.5	3.4	15.0	4.8	217956	0.3	34.3	104
1	Import (soil/fill)	3,193	15	47,895	371	1	HHDT	Diesel	5.9	260.0	2.9	2.7	12.1	3.9	176817	0.3	27.9	84
1	Tree Export/Import	40	15	600	371	1	HHDT	Diesel	4.2	51.7	0.1	0.1	0.2	0.0	11577	0.2	1.8	6
1 & 2	Worker Commute	8,904	12	104,177	371	12	Worker	Misc.	55.3	203.8	29.5	28.2	4.0	1.2	83632	3.5	13.1	40
							Total		72	827	36	34	31	10				233

Construction On-Road Emission by Year

Construction Year	ROG	NOx	PM10_ Ex	PM2.5_ Ex	PM10_ D**	PM2.5_ D**	CO2e
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	MT/yr
1	0.1931	2.2302	0.097	0.0928	0.0842	0.0267	110
2	0.1931	2.2302	0.097	0.0928	0.0842	0.0267	109.78

Note: The average daily emissions is estimated as the total emission over total work days, because worker commute dominates mobile onroad emission.
Notes:
*When there are no sufficient data to determine truck class, a heavier class is assumed.
**Particulate Matter from vehicle break wear and tire wear only.
GWP used for quantifying COe Emissions are values from IPCC 4th Assessment Report in Sheet GWP Assumpiton.
The calculation is based on the Emission Rates in the following table:

On-Road Emission Rates

Fleet Type	Fuel Type	VMT-Based Emission Rate (g/mi)									Trip-Based Emission Rate (g/trip)									Idle/Diurnal-Based Emission Rate (g/vehicle/day)								
		ROG	NOx	PM10_Ex	PM2.5_Ex	PM10_D	PM2.5 D	CO2	CH4	N2O	ROG	NOx	PM10_ Ex	PM2.5_ Ex	PM10_D	PM2.5 D	CO2	CH4	N2O	ROG	NOx	PM10_ Ex	PM2.5_ Ex	PM10_ D	PM2.5_ D	CO2	CH4	N2O
HHDT	Diesel	1.6E-2	1.80	2.7E-2	2.6E-2	1.1E-1	3.7E-2	1.6E+3	7.5E-4	2.5E-1	0.0E+0	3.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	5.1E+0	6.0E+1	3.0E-2	2.9E-2	0.0E+0	0.0E+0	1.2E+4	2.4E-1	1.8E+0
Worker Fleet	EMFAC default mix	1.6E-1	0.86	1.3E-1	1.2E-1	1.7E-2	5.3E-3	3.6E+2	8.1E-3	5.4E-2	0.0E+0	3.1E-1	2.4E-3	2.2E-3	0.0E+0	0.0E+0	7.9E+1	8.3E-2	3.5E-2	1.9E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0

Notes:
Process-specific emission rates are provided in worksheet EMFAC EF.

Fugitive Dust Emissions

Onsite Bulldozing

Phase	Workdays	Equipment	Total Equipment Hour	PM10 EF (lb/hr)	PM10 (lbs)	PM2.5 (lbs)	PM10 (lbs/day)	PM2.5 (lbs/day)	
1	371	Dozer	2968	0.47	1409.68	211.45	3.80	0.57	Unmitigated
					634.36	95.15	1.71	0.26	BMP

Onsite Off-Road Equipment Movement

Phase	Equipment	Equipment #	Hr/Day	Days of Phase	Weight (tons)	Hours per Phase	Active Hours	Vehicle Speed (mph)	Onsite VMT (unpaved road)	PM 10 EF (lb/VMT) Uncorrected	Corrected	PM emissions (lb) PM10, unmitigat	PM10, with BMP
1	Dozer	1	8	371	33	2968	2968	0.3	890.4	2.51	2.09	1,864.7	727.2
1	Front Loader	1	8	371	20	2968	2968	0.3	890.4	2.00	1.67	1,488.5	580.5
1	Dump Truck	2	8	371	30	5936	2968	2	5936	2.40	2.01	11,909.4	4,644.7
1	Excavator	1	8	371	39	2968	2968	0.3	890.4	2.70	2.26	2,010.3	784.0
2	Dump Truck	1	2	44	30	88	44	2	88	2.40	2.01	176.6	68.9

Notes:

Certain equipment were assumed not to generate significant fugitive dust and thus excluded from this table due to their nature or usage (such as water trucks, paving equipment, and rollers) or limited movement (such as cranes).

Weights of equipment data were engineering estimates based on general industry reference and data from manufacturer such as Caterpillar, Volvo Trucks, Putzmeister America, Schwing

Onsite truck activites were assumed to be 50% mobile, 50% standby (load/unload)

Phase	Workdays	PM emissions (lb), BMP PM10	PM2.5	PM emissions (lb/day), BMP PM10	PM2.5
1	371	6736.43	1010.46	18.16	2.72
2	44	68.86	10.33	1.56	0.23

Notes:

Mitigation reduction

61% Reduction by BMP watering unpaved road two times daily.

55% Reduction in fugitive dust emission from grading, bulldozing and truck loading by watering exposed area twice daily.

Onsite Offroad Equipment Dust Emissions by Year

Year	Avg Daily PM10 (lbs/day)	PM2.5 (lbs/day)
1	0.085	0.012
2	0.049	0.021

On-road Vehicles

Emission Factors

PM10 EF (lbs/VMT)	
Paved Roads	Paved Roads, Corrected
4.1E-4	4.0E-4

Notes:
Emission factor for travel on paved roads is estimated using Eq 3 and 3a on worksheet "Fugitive Dust EF".
For calculating EF from paved road, the average weight of all vehicles traveling the road is assumped to be 2.4 tons

Dust Emissions

			Total Emissions	
Trip Purpose	Workdays	Paved Road (mi)	PM10 (lbs)	PM2.5 (lbs)
Export (soil/waste)	371	59,667	23.648	5.912
Import (soil/fill)	371	47,889	18.980	2.847
Tree Export/Import	371	600	0.238	0.000
Worker Commute	371	104,177	41.289	0.000
		project	84.16	8.76

On-Road Dust Emissions by Year

	Avg Daily	
Year	PM10 (lbs/day)	PM2.5 (lbs/day)
1	0.227	0.057
2	0.227	0.057

PM2.5 to PM10 Mass Emission Ratio used in Calculation

Fugitive Dust Source	PM2.5/PM10	Reference
Paved road	0.25	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final
Unpaved road	0.15	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final

Equipment Exhaust Emissions Factors

Data Subset from CalEEMod Appendix G 11 Statewide Average Annual Offroad Equipment Emission Factors (grams per horsepower-hour)

Equipment	Yea	Fuel	Low	High HP	TO	R	N	S	PM	PM2.5		C	N
Cement and Mortar Mixers	2026	Diesel	0	25	0.669	0.553	3.255	0.163		0.150	570.163		
Cement and Mortar Mixers	2026	Electric	0	999	0.000	0.000	0.000	0.000		0.000	0.000		
Cement and Mortar Mixers	2026	Gasoline	0	25	1474.122	1472.899	238.240	2.410		1.821	429.645		
Cranes	2026	Diesel	0	25	1.548	1.301	5.994	0.396		0.364	586.607		
Cranes	2026	Diesel	25	50	1.747	1.468	6.409	0.440		0.405	589.414		
Cranes	2026	Diesel	50	75	1.643	1.381	4.710	0.988		0.909	525.501		
Cranes	2026	Diesel	75	100	0.428	0.360	3.706	0.188		0.173	526.523		
Cranes	2026	Diesel	100	175	0.385	0.323	3.329	0.158		0.146	528.820		
Cranes	2026	Diesel	175	300	0.297	0.250	1.484	0.104		0.096	527.563		
Cranes	2026	Diesel	300	600	0.235	0.198	1.637	0.075		0.069	527.461		
Cranes	2026	Diesel	600	750	0.477	0.400	2.686	0.196		0.180	527.258		
Cranes	2026	Diesel	750	999	0.478	0.402	3.301	0.201		0.185	527.133		
Cranes	2026	Electric	0	999	0.000	0.000	0.000	0.000		0.000	0.000		
Cranes	2026	Gasoline	25	50	764.287	763.980	133.213	0.056		0.043	819.488		
Cranes	2026	Gasoline	50	100	382.063	381.923	37.231	0.055		0.042	788.611		
Cranes	2026	Gasoline	100	175	226.536	226.395	37.432	0.073		0.055	1022.755		
Excavators	2026	Diesel	0	25	1.067	0.883	3.584	0.251		0.231	845.883		
Excavators	2026	Diesel	25	50	0.468	0.393	4.221	0.099		0.091	587.029		
Excavators	2026	Diesel	50	75	0.866	0.727	4.195	0.554		0.509	533.887		
Excavators	2026	Diesel	75	100	0.217	0.182	3.447	0.066		0.061	525.128		
Excavators	2026	Diesel	100	175	0.175	0.147	3.071	0.049		0.045	527.886		
Excavators	2026	Diesel	175	300	0.155	0.130	1.099	0.031		0.029	528.178		
Excavators	2026	Diesel	300	600	0.136	0.114	1.045	0.024		0.022	527.153		
Excavators	2026	Diesel	600	750	0.195	0.164	1.287	0.050		0.046	530.733		
Excavators	2026	Diesel	750	999	0.101	0.085	1.001	0.022		0.020	534.915		
Excavators	2026	Electric	0	999	0.000	0.000	0.000	0.000		0.000	0.000		
Off-Highway Trucks	2026	Diesel	0	25	1.757	1.477	5.626	7.422	0.540		0.497	586.416	
Off-Highway Trucks	2026	Diesel	25	50	0.642	0.539	3.630	6.175	0.110		0.102	582.867	
Off-Highway Trucks	2026	Diesel	50	75	0.290	0.244	1.896	3.952	0.042		0.039	536.370	
Off-Highway Trucks	2026	Diesel	75	100	0.316	0.266	2.294	3.767	0.114		0.105	526.275	
Off-Highway Trucks	2026	Diesel	100	175	0.238	0.200	1.141	3.339	0.056		0.052	526.869	
Off-Highway Trucks	2026	Diesel	175	300	0.218	0.184	1.063	1.220	0.041		0.038	526.158	
Off-Highway Trucks	2026	Diesel	300	600	0.209	0.176	1.011	1.176	0.036		0.033	529.168	
Off-Highway Trucks	2026	Diesel	600	750	0.281	0.236	1.660	1.589	0.064		0.059	528.767	
Off-Highway Trucks	2026	Diesel	750	999	0.202	0.170	2.902	1.126	0.047		0.043	523.660	
Off-Highway Trucks	2026	Electric	0	999	0.000	0.000	0.000	0.000	0.000		0.000	0.000	
Other Construction Equipment	2026	Diesel	0	25	0.994	0.822	6.236	4.875	0.242		0.222	848.462	
Other Construction Equipment	2026	Diesel	25	50	0.811	0.681	4.084	4.689	0.231		0.212	589.469	
Other Construction Equipment	2026	Diesel	50	75	1.367	1.148	9.822	4.741	0.756		0.695	522.680	
Other Construction Equipment	2026	Diesel	75	100	0.335	0.282	2.734	3.504	0.158		0.145	527.541	
Other Construction Equipment	2026	Diesel	100	175	0.264	0.221	1.956	3.145	0.101		0.093	527.138	
Other Construction Equipment	2026	Diesel	175	300	0.243	0.204	2.048	1.374	0.081		0.075	529.258	
Other Construction Equipment	2026	Diesel	300	600	0.177	0.149	1.278	1.239	0.048		0.044	528.521	
Other Construction Equipment	2026	Diesel	600	750	0.186	0.156	1.475	1.122	0.050		0.046	529.144	
Other Construction Equipment	2026	Diesel	750	999	0.147	0.123	2.713	1.000	0.044		0.040	527.519	
Other Construction Equipment	2026	Electric	0	999	0.000	0.000	0.000	0.000	0.000		0.000	0.000	
Other Construction Equipment	2026	Gasoline	100	175	239.886	239.832	0.972	25.264	0.054		0.041	757.046	
Pavers	2026	Diesel	0	25	1.038	0.858	3.542	0.245		0.225	860.219		
Pavers	2026	Diesel	25	50	1.047	0.880	4.903	0.249		0.229	588.023		
Pavers	2026	Diesel	50	75	0.645	0.542	3.673	0.368		0.338	525.253		
Pavers	2026	Diesel	75	100	0.282	0.237	3.431	0.129		0.119	525.804		
Pavers	2026	Diesel	100	175	0.206	0.173	3.012	0.073		0.067	528.486		
Pavers	2026	Diesel	175	300	0.129	0.108	1.002	0.034		0.031	528.275		
Pavers	2026	Diesel	300	600	0.123	0.104	0.980	0.031		0.028	527.269		
Pavers	2026	Diesel	600	750	0.080	0.067	0.962	0.009		0.009	528.473		
Pavers	2026	Electric	0	999	0.000	0.000	0.000	0.000		0.000	0.000		
Rollers	2026	Diesel	0	25	1.008	0.833	4.395	0.242		0.223	848.045		
Rollers	2026	Diesel	25	50	0.645	0.542	4.093	0.154		0.142	586.914		
Rollers	2026	Diesel	50	75	2.254	1.894	15.168	6.197	1.090		1.002	527.546	
Rollers	2026	Diesel	75	100	0.274	0.231	3.411	0.116		0.106	528.012		
Rollers	2026	Diesel	100	175	0.144	0.121	2.911	0.044		0.041	527.368		
Rollers	2026	Diesel	175	300	0.243	0.204	1.519	0.083		0.077	528.142		
Rollers	2026	Diesel	300	600	0.175	0.147	1.437	0.051		0.046	528.943		
Rollers	2026	Electric	0	999	0.000	0.000	0.000	0.000		0.000	0.000		
Rollers	2026	Gasoline	0	25	330.944	329.795	263.559	3.127		2.362	429.499		
Rollers	2026	Gasoline	25	50	431.563	431.198	169.140	0.054		0.041	789.374		
Rollers	2026	Gasoline	50	100	212.866	212.693	49.171	0.054		0.041	777.932		
Rubber Tired Dozers	2026	Diesel	25	50	0.659	0.554	5.392	0.127		0.117	586.933		
Rubber Tired Dozers	2026	Diesel	50	75	0.765	0.643	4.213	0.369		0.339	527.921		
Rubber Tired Dozers	2026	Diesel	75	100	0.658	0.553	4.153	0.323		0.297	534.030		
Rubber Tired Dozers	2026	Diesel	100	175	0.516	0.434	3.575	0.220		0.202	528.033		
Rubber Tired Dozers	2026	Diesel	175	300	0.567	0.477	3.568	0.225		0.207	528.489		
Rubber Tired Dozers	2026	Diesel	300	600	0.420	0.353	2.726	0.142		0.131	532.550		
Rubber Tired Dozers	2026	Diesel	600	750	0.283	0.238	1.111	0.082		0.075	527.876		
Rubber Tired Dozers	2026	Electric	0	999	0.000	0.000	0.000	0.000		0.000	0.000		
Rubber Tired Loaders	2026	Diesel	0	25	1.026	0.848	3.501	0.242		0.223	850.265		
Rubber Tired Loaders	2026	Diesel	25	50	1.038	0.872	5.780	0.215		0.198	588.570		
Rubber Tired Loaders	2026	Diesel	50	75	2.322	1.951	15.449	6.324	1.133		1.042	528.023	
Rubber Tired Loaders	2026	Diesel	75	100	0.387	0.325	3.785	0.153		0.141	523.446		
Rubber Tired Loaders	2026	Diesel	100	175	0.252	0.211	3.293	0.073		0.067	526.415		
Rubber Tired Loaders	2026	Diesel	175	300	0.208	0.175	1.166	0.045		0.041	526.593		
Rubber Tired Loaders	2026	Diesel	300	600	0.222	0.187	1.235	0.049		0.045	527.198		
Rubber Tired Loaders	2026	Diesel	600	750	0.233	0.196	1.476	0.040		0.037	526.611		
Rubber Tired Loaders	2026	Diesel	750	999	0.224	0.188	1.120	0.064		0.058	529.048		
Rubber Tired Loaders	2026	Electric	0	999	0.000	0.000	0.000	0.000		0.000	0.000		
Rubber Tired Loaders	2026	Gasoline	25	50	525.667	525.354	148.110	0.055		0.042	803.869		
Rubber Tired Loaders	2026	Gasoline	50	100	291.827	291.688	41.333	0.054		0.041	776.494		

Equipment Horsepower and Load Factors

Equipment	Fuel	Horsepower	Load Factor
Aerial Lifts	Diesel	46	0.31
Aerial Lifts	Electric	46	0.31
Aerial Lifts	Gasoline	33	0.46
Air Compressors	Diesel	37	0.48
Air Compressors	Electric	37	0.48
Air Compressors	Gasoline	6	0.56
Bore/Drill Rigs	Diesel	83	0.50
Bore/Drill Rigs	Electric	83	0.50
Bore/Drill Rigs	Gasoline	17	0.79
Cement and Mortar Mixers	Diesel	10	0.56
Cement and Mortar Mixers	Electric	10	0.56
Cement and Mortar Mixers	Gasoline	7	0.59
Concrete/Industrial Saws	Diesel	33	0.73
Concrete/Industrial Saws	Electric	33	0.73
Concrete/Industrial Saws	Gasoline	10	0.78
Cranes	Diesel	367	0.29
Cranes	Electric	367	0.29
Cranes	Gasoline	74	0.47
Crawler Tractors	Diesel	87	0.43
Crawler Tractors	Electric	87	0.43
Crushing/Proc. Equipment	Electric	12	0.85
Crushing/Proc. Equipment	Gasoline	12	0.85
Dumpers/Tenders	Diesel	16	0.38
Dumpers/Tenders	Electric	16	0.38
Dumpers/Tenders	Gasoline	9	0.41
Excavators	Diesel	36	0.38
Excavators	Electric	36	0.38
Forklifts	Diesel	82	0.20
Forklifts	Electric	82	0.20
Forklifts	Gasoline	70	0.30
Generator Sets	Diesel	14	0.74
Generator Sets	Electric	14	0.74
Generator Sets	Gasoline	11	0.68
Graders	Diesel	148	0.41
Graders	Electric	148	0.41
Off-Highway Tractors	Diesel	38	0.44
Off-Highway Tractors	Electric	38	0.44
Off-Highway Trucks	Diesel	376	0.38
Off-Highway Trucks	Electric	376	0.38
Other Construction Equipment	Diesel	82	0.42
Other Construction Equipment	Electric	82	0.42
Other Construction Equipment	Gasoline	126	0.48
Other General Industrial Equipment	Diesel	35	0.34
Other General Industrial Equipment	Electric	35	0.34
Other General Industrial Equipment	Gasoline	11	0.54
Other Material Handling Equipment	Diesel	93	0.40
Other Material Handling Equipment	Electric	93	0.40
Other Material Handling Equipment	Gasoline	54	0.53
Pavers	Diesel	81	0.42

Pavers	Electric	81	0.42
Paving Equipment	Diesel	89	0.36
Paving Equipment	Electric	89	0.36
Paving Equipment	Gasoline	8	0.59
Plate Compactors	Diesel	8	0.43
Plate Compactors	Electric	8	0.43
Plate Compactors	Gasoline	6	0.55
Pressure Washers	Diesel	14	0.30
Pressure Washers	Electric	14	0.30
Pressure Washers	Gasoline	7	0.85
Pumps	Diesel	11	0.74
Pumps	Electric	11	0.74
Pumps	Gasoline	6	0.69
Rollers	Diesel	36	0.38
Rollers	Electric	36	0.38
Rollers	Gasoline	12	0.62
Rough Terrain Forklifts	Diesel	96	0.40
Rough Terrain Forklifts	Electric	96	0.40
Rough Terrain Forklifts	Gasoline	85	0.63
Rubber Tired Dozers	Diesel	367	0.40
Rubber Tired Dozers	Electric	367	0.40
Rubber Tired Loaders	Diesel	150	0.36
Rubber Tired Loaders	Electric	150	0.36
Rubber Tired Loaders	Gasoline	72	0.54
Scrapers	Diesel	423	0.48
Scrapers	Electric	423	0.48
Signal Boards	Diesel	6	0.82
Signal Boards	Electric	6	0.82
Signal Boards	Gasoline	8	0.76
Skid Steer Loaders	Diesel	71	0.37
Skid Steer Loaders	Electric	71	0.37
Skid Steer Loaders	Gasoline	19	0.58
Surfacing Equipment	Diesel	399	0.30
Surfacing Equipment	Electric	399	0.30
Surfacing Equipment	Gasoline	8	0.49
Sweepers/Scrubbers	Diesel	36	0.46
Sweepers/Scrubbers	Electric	36	0.46
Sweepers/Scrubbers	Gasoline	13	0.71
Tractors/Loaders/Backhoes	Diesel	84	0.37
Tractors/Loaders/Backhoes	Electric	84	0.37
Tractors/Loaders/Backhoes	Gasoline	63	0.48
Trenchers	Diesel	40	0.50
Trenchers	Electric	40	0.50
Trenchers	Gasoline	15	0.66
Welders	Diesel	46	0.45
Welders	Electric	46	0.45
Welders	Gasoline	16	0.51

Sources: California Air Resources Board (CARB). 2021. OFFROAD2017 - ORION. Available: https://www.arb.ca.gov/orion/. Accessed: March 2021.; California Air Resources Board (CARB). 2017. 2017 Emission Factors. Available: https://ww3.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017_v7.xlsx. Accessed: March 2021.

Source: CalEEMod 2022 Appendix G Table G-12

EMFAC 2021 (On-Road) Emission Rates Output

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Air District
Region: Bay Area AQMD
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar	Vehicle C	Model Ye	Speed	Fuel	Populatic	Total VM	CVMT	EVMT	Trips	Energy C	NOx_RUN	NOx_IDLI	NOx_STR	NOx_TOT	PM2.5_R	PM2.5_ID	PM2.5_S	PM2.5_T	PM2.5_P	PM2.5_P	PM2.5_TOTAL
Bay Area	2026	HHDT	Aggregat	Aggregat	Gasoline	16.6702	1732.99	1732.99	0	333.537	0	0.00763	0	4.3E-05	0.00768	2.7E-06	0	2.4E-07	2.9E-06	9.6E-06	6E-05	7.27869E-05
Bay Area	2026	HHDT	Aggregat	Aggregat	Diesel	37718.5	4322321	4322321	0	554032	0	8.58194	2.49299	1.80165	12.8766	0.12199	0.0012	0	0.1232	0.04194	0.13198	0.297115298
Bay Area	2026	HHDT	Aggregat	Aggregat	Electricity	441.28	46675.1	0	46675.1	5841.04	86055.5	0	0	0	0	0	0	0	0	0.00044	0.00077	0.00120959
Bay Area	2026	HHDT	Aggregat	Aggregat	Natural G	3518.31	231969	231969	0	32124.2	0	0.23562	0.04998	0	0.2856	0.00042	0.0001	0	0.00052	0.0023	0.01248	0.015306516
Bay Area	2026	LDA	Aggregat	Aggregat	Gasoline	2201974	8E+07	8E+07	0	1E+07	0	3.16622	0	2.71129	5.87751	0.09888	0	0.02077	0.11964	0.17631	0.22594	0.521889747
Bay Area	2026	LDA	Aggregat	Aggregat	Diesel	7333.29	198341	198341	0	30733.9	0	0.03937	0	0	0.03937	0.0032	0	0	0.0032	0.00044	0.00058	0.004214006
Bay Area	2026	LDA	Aggregat	Aggregat	Electricity	197143	8635855	0	8635855	961930	3334153	0	0	0	0	0	0	0	0	0.01904	0.0146	0.033637567
Bay Area	2026	LDA	Aggregat	Aggregat	Plug-in H	72207.2	3088502	1465289	1623213	298577	490259	0.01059	0	0.03832	0.04891	0.00185	0	0.00062	0.00247	0.00681	0.00465	0.013926012
Bay Area	2026	LDT1	Aggregat	Aggregat	Gasoline	206449	6642983	6642983	0	915153	0	0.74162	0	0.35814	1.09976	0.0113	0	0.00249	0.01379	0.01465	0.02296	0.051395224
Bay Area	2026	LDT1	Aggregat	Aggregat	Diesel	90.0501	1032.16	1032.16	0	246.655	0	0.00183	0	0	0.00183	0.00027	0	0	0.00027	2.3E-06	4.2E-06	0.000274878
Bay Area	2026	LDT1	Aggregat	Aggregat	Electricity	871.751	36376.2	0	36376.2	4192.28	14044.2	0	0	0	0	0	0	0	0	8E-05	6.2E-05	0.000141706
Bay Area	2026	LDT1	Aggregat	Aggregat	Plug-in H	510.988	23454.8	10006.8	13448	2112.93	4061.7	7.2E-05	0	0.00027	0.00034	8.7E-06	0	3.1E-06	1.2E-05	5.2E-05	3.6E-05	9.91063E-05
Bay Area	2026	LDT2	Aggregat	Aggregat	Gasoline	1129979	4.1E+07	4.1E+07	0	5288582	0	2.45444	0	1.72864	4.18308	0.05291	0	0.01088	0.06379	0.09107	0.1373	0.292158164
Bay Area	2026	LDT2	Aggregat	Aggregat	Diesel	4539.43	166791	166791	0	21379.6	0	0.00733	0	0	0.00733	0.00086	0	0	0.00086	0.00037	0.00056	0.001782988
Bay Area	2026	LDT2	Aggregat	Aggregat	Electricity	10495.5	350457	0	350457	53110.2	135305	0	0	0	0	0	0	0	0	0.00077	0.00059	0.001362764
Bay Area	2026	LDT2	Aggregat	Aggregat	Plug-in H	11644.8	507567	227375	280192	48151.3	84626.3	0.00164	0	0.00618	0.00782	0.00023	0	8.2E-05	0.00032	0.00112	0.00077	0.002201287

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PM10_RI	PM10_ID	PM10_ST	PM10_TO	PM10_PI	PM10_PI	PM10_TO	CO2_RUN	CO2_IDLI	CO2_STR	CO2_TOT	CH4_RUN	CH4_IDLI	CH4_STR	CH4_TOT	N2O_RUI	N2O_IDL	N2O_STR	N2O_TOT	ROG_RUNEX	ROG_IDLEX	ROG_STR	ROG_TOT
2.9E-06	0	2.6E-07	3.2E-06	3.8E-05	0.00017	0.00021	4.21795	0	0.01923	4.23718	0.00022	0	4.5E-08	0.00022	0.00029	0	1.4E-06	0.00029	0.001112911	0	2.5E-07	0.00111
0.12751	0.00126	0	0.12877	0.16775	0.37708	0.6736	7550.67	481.959	0	8032.63	0.00358	0.00983	0	0.0134	1.18961	0.07593	0	1.26554	0.0770023	0.21155111	0	0.28855
0	0	0	0	0.00178	0.00219	0.00396	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.00046	0.00011	0	0.00057	0.00921	0.03566	0.04543	347.069	41.0675	0	388.137	0.50128	0.13408	0	0.63535	0.07075	0.00837	0	0.07912	0.010628025	0.00200886	0	0.01264
0.10754	0	0.02259	0.13012	0.70523	0.64554	1.48089	23430.7	0	756.334	24187	0.17397	0	0.73727	0.91125	0.37499	0	0.35638	0.73137	0.647119587	0	3.34018	3.9873
0.00334	0	0	0.00334	0.00175	0.00165	0.00674	50.9246	0	0	50.9246	0.00026	0	0	0.00026	0.00802	0	0	0.00802	0.005491814	0	0	0.00549
0	0	0	0	0.07616	0.04171	0.11787	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.00201	0	0.00067	0.00268	0.02724	0.01329	0.04321	446.462	0	20.789	467.251	0.00141	0	0.01397	0.01538	0.00187	0	0.00675	0.00862	0.004533588	0	0.05768	0.06221
0.01228	0	0.00271	0.015	0.05858	0.0656	0.13918	2328.6	0	84.0829	2412.68	0.03556	0	0.09674	0.1323	0.05794	0	0.03755	0.09549	0.154939583	0	0.49011	0.64505
0.00028	0	0	0.00028	9.1E-06	1.2E-05	0.0003	0.47699	0	0	0.47699	1.6E-05	0	0	1.6E-05	7.5E-05	0	0	7.5E-05	0.000341463	0	0	0.00034
0	0	0	0	0.00032	0.00018	0.0005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9.5E-06	0	3.3E-06	1.3E-05	0.00021	0.0001	0.00032	3.04474	0	0.15548	3.20022	9.6E-06	0	9.9E-05	0.00011	1.3E-05	0	4.7E-05	6E-05	3.08794E-05	0	0.00041	0.00044
0.05754	0	0.01184	0.06938	0.36429	0.39227	0.82594	14809.4	0	482.637	15292	0.1073	0	0.434	0.5413	0.23378	0	0.2044	0.43818	0.406136452	0	1.97202	2.37816
0.00089	0	0	0.00089	0.00147	0.0016	0.00396	55.6666	0	0	55.6666	0.00011	0	0	0.00011	0.00877	0	0	0.00877	0.002426319	0	0	0.00243
0	0	0	0	0.00309	0.00169	0.00478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.00025	0	8.9E-05	0.00034	0.00448	0.00219	0.00701	69.1795	0	3.87683	73.0563	0.00022	0	0.00224	0.00246	0.00029	0	0.00108	0.00137	0.000701847	0	0.00931	0.01001

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ROG_DIU	ROG_HO	ROG_RUI	ROG_TOT	TOG_RUI	TOG_IDLI	TOG_STR	TOG_TOT	TOG_DIU	TOG_HO	TOG_RUI	TOG_TOT	CO_RUNI	CO_IDLE	CO_STRE	CO_TOTE	SOx_RUN	SOx_IDLE	SOx_STRI	SOx_TOT	NH3_RUI	Fuel Consumption
6.5E-05	2E-05	0.00017	0.00136	0.00162	0	2.7E-07	0.00162	6.5E-05	2E-05	0.00017	0.00188	0.06156	0	0.00172	0.06328	4.2E-05	0	1.9E-07	4.2E-05	8.6E-05	0.44681
0	0	0	0.28855	0.08766	0.24083	0	0.3285	0	0	0	0.3285	0.36169	3.08483	0	3.44652	0.0715	0.00456	0	0.07606	1.02663	717.551
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0.01264	0.51554	0.13694	0	0.65248	0	0	0	0.65248	3.11319	0.28774	0	3.40093	0	0	0	0	0.21452	44.8627
3.36988	0.97888	2.59139	10.9274	0.94428	0	3.65707	4.60135	3.36988	0.97888	2.59139	11.5415	57.1456	0	33.6703	90.8159	0.23164	0	0.00748	0.23911	3.21516	2550.49
0	0	0	0.00549	0.00625	0	0	0.00625	0	0	0	0.00625	0.07186	0	0	0.07186	0.00048	0	0	0.00048	0.00068	4.54908
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.0341	0.01335	0.01237	0.12203	0.00662	0	0.06315	0.06977	0.0341	0.01335	0.01237	0.12958	0.6836	0	0.44804	1.13164	0.00441	0	0.00021	0.00462	0.06447	49.271
0.55959	0.15683	0.4444	1.80588	0.22609	0	0.53661	0.7627	0.55959	0.15683	0.4444	1.92352	8.49484	0	4.8258	13.3206	0.02302	0	0.00083	0.02385	0.26852	254.414
0	0	0	0.00034	0.00039	0	0	0.00039	0	0	0	0.00039	0.00191	0	0	0.00191	4.5E-06	0	0	4.5E-06	3.5E-06	0.04261
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.00015	5.5E-05	4.7E-05	0.00069	4.5E-05	0	0.00045	0.00049	0.00015	5.5E-05	4.7E-05	0.00075	0.00466	0	0.00317	0.00783	3E-05	0	1.5E-06	3.2E-05	0.00046	0.33746
1.59974	0.44049	1.21514	5.63352	0.59263	0	2.15911	2.75175	1.59974	0.44049	1.21514	6.00712	32.6836	0	19.4026	52.0862	0.14641	0	0.00477	0.15118	1.72329	1612.52
0	0	0	0.00243	0.00276	0	0	0.00276	0	0	0	0.00276	0.02499	0	0	0.02499	0.00053	0	0	0.00053	0.00057	4.97268
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.00382	0.00136	0.00123	0.01642	0.00102	0	0.01019	0.01122	0.00382	0.00136	0.00123	0.01763	0.10577	0	0.07234	0.17811	0.00068	0	3.8E-05	0.00072	0.01052	7.7037

Emission Factors based on VMT, Trip, and Idle/Diurnal

Summed columns in EMFAC: AC M X Q C UV AE AI AM V AW Q Z S AG AK AO U N Y R AE AJ AN

Vehicle Category	Fuel	VMT-based (g/mile)									Trip-based (g/trip)									Idle/diurnal-based (g/vehicle/day)								
		ROG	NOx	PM10_Ex	PM2.5_Ex	PM10_D	PM2.5_D	CO2	CH4	N2O	ROG	NOx	PM10_Ex	PM2.5_Ex	PM10_D	PM2.5_D	CO2	CH4	N2O	ROG	NOx	PM10_Ex	PM2.5_Ex	PM10_D	PM2.5_D	CO2	CH4	N2O
HHDT	Diesel	0.02	1.8	0.03	0.03	0.11	0.04	1585	0	0.25	0	2.95	0	0	0	0	0	0	0	5.09	60	0.03	0.03	0	0	11592	0.24	1.83
LDA	Gasoline	0.01	0.04	0	0	0.02	0	266	0	0	0	0.24	0	0	0	0	67.3	0.07	0.03	1.39	0	0	0	0	0	0	0	0
LDA	Diesel	0.03	0.18	0.02	0.01	0.02	0	233	0	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LDA	Electricity	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LDA	Plug-in Hybrid	0	0	0	0	0.01	0	131	0	0	0	0.12	0	0	0	0	63.2	0.04	0.02	0.43	0	0	0	0	0	0	0	0
LDT1	Gasoline	0.02	0.1	0	0	0.02	0.01	318	0	0.01	0	0.36	0	0	0	0	83.4	0.1	0.04	2.46	0	0	0	0	0	0	0	0
LDT1	Diesel	0.3	1.6	0.25	0.24	0.02	0.01	419	0.01	0.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LDT1	Electricity	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LDT1	Plug-in Hybrid	0	0	0	0	0.01	0	118	0	0	0	0.12	0	0	0	0	66.8	0.04	0.02	0.27	0	0	0	0	0	0	0	0
LDT2	Gasoline	0.01	0.05	0	0	0.02	0.01	325	0	0.01	0	0.3	0	0	0	0	82.8	0.07	0.04	1.28	0	0	0	0	0	0	0	0
LDT2	Diesel	0.01	0.04	0	0	0.02	0.01	303	0	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LDT2	Electricity	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LDT2	Plug-in Hybrid	0	0	0	0	0.01	0	124	0	0	0	0.12	0	0	0	0	73	0.04	0.02	0.3	0	0	0	0	0	0	0	0
Worker Fleet	EMFAC default mix	0.16	0.86	0.13	0.12	0.02	0.01	357	0.01	0.05	0	0.31	0	0	0	0	79.2	0.08	0.04	1.9	0	0	0	0	0	0	0	0

Notes:

Assume Worker Fleet = 25/50/25 percent mix of light duty autos, light duty truck class 1, and light duty truck class 2

EMFAC Emission Types Used to Estimate Onroad Emission Rates

Pollutant group	VMT-based (g/mile)	Trip-based (g/trip)	Idle/Diurnal-based
TOG, ROG	RUNEX	STREX, HOTSOAK,	IDLEX, DIURN
Gases	RUNEX	STREX	IDLEX
PM - Exhaust	RUNEX	STREX	IDLEX
PM - Dust	PMTW, PMBW		

Acronyms:

RUNEX	Running exhaust	g/mile
PMBW	PM brakewear	g/mile
PMTW	PM tirewear	g/mile
STREX	Start exhaust	g/trip
HOTSOAK	Hot Soak evaporative	g/trip
RUNLOSS	Running Loss evaporative	g/trip
IDLEX	Idle exhaust	g/vehicle/day
DIURN	Diurnal Loss evaporative	g/vehicle/day

Fugitive Dust Emission Factors

1 Aggregate Storage Piles [1]

Emissions result from several distinct processes within the stockpiling cycle: 1. loading of materials through batch or drop operations, 2. equipment

E(lb/ton)=(k)(0.0032)(U/5)^1.3/(M/2)^1.4

Where:	PM10	Unit	Source
k= Particle Size Multiplier:	0.35	dimensionless	AP-42 Chapter 13.2.4-3, PM10 emissions
U= mean wind speed	5.7	mph	CalEEMod for Solano-San Francisco County
M= moisture content (%)	3.4	constant	AP-42 Chapter 13.2.4-3, Table 13.2.4-1, exposed ground
PM10 Emission factor	**0.40**	**lbs/ton**	

2 Travel on Unpaved Roads (Heavy Duty Trucks)[2]

E(lbs/VMT)=(k)(s/12)^a (W/3)^b

Where:	PM10	Unit	Source
k= Particle Size Multiplier:	1.5	dimensionless	AP-42 Chapter 13.2.2-2, PM10 emissions; industrial roads
s= Silt Content (%)	6.4	constant	AP-42 Chapter 13.2.2-1, municipal solid waste landfills disposal routes
a=	0.9	constant	AP-42 Chapter 13.2.2-2, industrial roads
b=	0.45	constant	AP-42 Chapter 13.2.2-2, industrial roads
W=Vehicle Weight	1.0	tons	Unit weight of vehicle
PM10 Emission factor	**0.520**	**lbs/VMT**	For above weight truck

2a Correction for Natural Precipitation[3]

E(ext)=E[(365-P)/365]

Where:		Unit	Source
P=#days/yr with >=0.01 inch precipitation during	60	days	AP-42 Chapter 13.2.2, Figure 13.2.2-1
Corrected EF PM10	**0.434**	lbs/VMT	

3 Travel on Paved Roads

E(lbs/VMT)=(k)(sL)^.91 (W)^1.02

Where:	PM10	Unit	Source
k= Particle Size Multiplier:	0.0022	lb/VMT	AP-42 Chapter 13.2.1, Table 13.2.1-1, PM10 emissions
sL= road surface silt loading	0.06	g/m^2	AP-42 Chapter 13.2.1, Table 13.2.1-2 Baseline with ADT category 5,000-10,000
	7.4	g/m^2	AP-42 Chapter 13.2.1, Table 13.2.1-3, Municipal solid waste landfill
W= average weight of the vehicles traveling the roa	2.4	tons	Statewide average vehicle weight in CA
PM10 Emission factor	0.00041	lbs/VMT	Public roads
	0.03337	lbs/VMT	Industrial roads

Correction for Natural Precipitation[5]

3a E(ext)=E[(1-P/4N)]

Where:		Unit	Source
Eext = annual or other long-term average emission factor		dimensionless	
P=#days/yr with >=0.01 inch precipitation during	60	days	AP-42 Chapter 13.2.1, Figure 13.2.1- FAIRFIELD, CALIFORNIA - Climate Summary (c
N=# days in averaging period	365	days	
Corrected EF PM10	**0.00040**	lbs/VMT	Public roads
	0.03200	lbs/VMT	Industrial roads

4 Bulldozing[6]

Equation is applied to graders and dozers to estimate fugitive dust from grading activity

Emissions factors for P10 from bulldozing are scaled from those of PM15

E(lbs/hr)=1.0*s^1.5/M^1.4 AP-42 Table 11.9-1, PM15,overburden

Where

E(PM10)=E(PM15)*F

Where:			**PM15** Unit	Source
M=	material moisture content	7.9	%	AP-42 Table 11.9-3,Overburden
s=	material silt content	6.9	%	AP-42 Table 11.9-3,Overburden
F=	scaling factor	0.75	constant	AP-42 Table 11.9-1, PM10
	PM15	0.63	lbs/hr	
	PM10	**0.47**	lbs/hr	

Sources

[1] EPA. AP 42, Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources, 13.2.4 Aggregate Handling And Storage Piles, Eqn. 1

[2] EPA. AP 42, Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources, 13.2.2 Unpaved Roads, Eqn. 1

[3] EPA. AP 42, Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources, 13.2.2 Unpaved Roads, Eqn. 2

[4] EPA. AP 42, Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources, 13.2.1 Paved Road, Eqn. 1

[5] EPA. AP 42, Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources, 13.2.1 Paved Road, Eqn. 2

[6] EPA. AP 42, Fifth Edition, Volume I Chapter 11: Mineral Products Industry, 11.9 Mineral Products Industry, Table 11.9-1 Bulldozing

Appendix C

Noise Modeling Data

Suisun Force Main Microtunneling

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Residential Threshold	13	90.0
Non-residential Threshold	5	98.5

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Crane	81	0.16
Excavator	81	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Crane	73.0
Excavator	77.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
78.5

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Suisun Force Main Trenching

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Residential Threshold	15	90.0
Non-residential Threshold	5	99.6

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	81	0.4
Front End Loader	79	0.4
Flat Bed Truck	74	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Excavator	77.0
Front End Loader	75.0
Flat Bed Truck	70.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
79.6

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Suisun Force Main Trenching

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Residence	175	72.9
Threshold	25	89.8

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Excavator	81	1
Front End Loader	79	1
Pickup Truck	75	1

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Excavator	81.0
Front End Loader	79.0
Pickup Truck	75.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
83.7

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Construction Equipment Reference Emissions Levels

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS signs)	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jack	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (hoe ram)	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzle)	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-truck)	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0
chipper		75							

Source:
FHWA Roadway Construction Noise Model, January 2006. Table 9.1
U.S. Department of Transportation
CA/T Construction Spec. 721.560

Distance Propagation Calculations for Stationary Sources of Ground Vibration

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.
— If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.
— If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

STEP 3A: Select the distance to the receiver.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (VdB)	@	distance (ft)	vibration level (VdB)	@	distance (ft)
vibratory roller	94	@	25	80.0	@	73

80 vdb

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

STEP 3B: Select the distance to the receiver.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level			Attenuated Noise Level at Receptor		
	vibration level (PPV)	@	distance (ft)	vibration level (PPV)	@	distance (ft)
vibratory roller	0.210	@	25	0.20	@	26

0.2 ppv

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

Notes:
Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. Washington, D.C. Accessed: December 20, 2020. Page 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