San Francisco Planning

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Preliminary Mitigated Negative Declaration

Date:	July 29, 2020
Case No.:	**2016-011136ENV**
Project Address:	**Southeast Bay Outfall Islais Creek Crossing Replacement Project**
Zoning:	M-2 Heavy Industrial and PDR-2 Production, Distribution, and Repair Use Districts
Block/Lot	Not Applicable
Lot Size	Not Applicable
Project Sponsor	Sue Chau, San Francisco Public Utilities Commission (415) 554-3238
Lead Agency	San Francisco Planning Department
Staff Contact:	Julie Moore - (415) 575-8733 Julie.Moore@sfgov.org

Project Description: The San Francisco Public Utilities Commission (SFPUC) is proposing the Southeast Bay Outfall Islais Creek Crossing Replacement Project (proposed project) to improve the reliability of the Southeast Bay Outfall system, which transports treated effluent from the Southeast Water Pollution Control Plant to the San Francisco Bay. The proposed project would replace a segment of the system, comprised of two parallel pipelines that cross Islais Creek, just west of Third Street in the Bayview-Hunter's Point neighborhood. The existing pipelines beneath Islais Creek are deteriorating and have reached the end of their useful life. In June 2019, as part of an emergency project, SFPUC decommissioned one of the pipes and installed a temporary high-density polyethylene bypass pipeline across Islais Creek. The proposed project consists of installing of two new permanent high-density polyethylene and steel pipelines beneath and immediately adjacent to Islais Creek. As part of the proposed project, the remaining in-service ductile iron pipeline beneath Islais Creek would be abandoned in place and the temporary bypass pipeline would be removed. Construction of the proposed project would require an approximately 3.5-year period, expected to begin in 2021, and would take approximately 27 months of active construction. Construction would require temporary closure of Islais Creek Park and Tulare Park.

Finding: This project could not have a significant effect on the environment. This finding is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15064 (Determining Significant Effect), 15065 (Mandatory Findings of Significance), and 15070 (Decision to prepare a Negative Declaration), and the following reasons as documented in the Initial Evaluation (Initial Study) for the project, which is attached. Mitigation measures are included in this project to avoid potentially significant effects. See pages 203 through 206.

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INITIAL STUDY

Southeast Bay Outfall Islais Creek Crossing Replacement Project
Planning Department Case No. 2016-011136ENV

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GLOSSARY

Anchor pile – Temporary support pile installed during construction to resist lateral movement and guide installation of permanent larger diameter piles.

Booster station – A structure that contains pumps to boost the pressure of a fluid flowing through inlet/outlet pipes to keep it moving towards its destination.

Bypass pipeline – A system of pipes and valves (manifolds) to divert flow around a specific segment of pipe or valve structure. A temporary diversion of flow around a part of a pipe system that allows flow to continue when the primary line is blocked, damaged, or undergoing repair or rehabilitation.

C**apacity –** Engineering term for describing volume or flow of structures. There are multiple uses of the term. This document uses the term "design capacity," which is the maximum capacity or flow rate up to which a treatment facility or transmission system component is designed to operate under a specified set of regulatory criteria, engineering standards, or other engineering assumptions.

Cathodic protection – A method of controlling corrosion of a metal surface by connecting the protected metal (cathode) to a more easily corroded metal that acts as an anode.

Cofferdam – A watertight enclosure installed within a body of water that may be dried (using pumps) to allow construction to occur below the waterline.

Combined sewer system – A combined sewer system is one that collects and conveys both sewage and stormwater in a single pipeline/structure to facilities for treatment and discharge.

Dewatering – The process of removing water from a pipeline for repair and maintenance or for removing groundwater from a trench or cofferdam during construction.

Discharge – The flow of surface water in a stream or canal or the outflow of groundwater from a flowing artesian well, ditch, or spring. Also refers to the discharge of liquid effluent from a facility.

Dry-weather flow – A combination of domestic, industrial, and commercial wastes.

Effluent – The liquid flowing out of a treatment process.

Flexible joint – A pipe joint composed of flexible material that allows for thermal pipe expansion, contraction, vibration, and seismic activity without compromising the integrity of the joint.

Flow – The volume of water passing a given point per unit of time.

Gravity pipeline – A system in which the surface of the fluid flowing through the pipeline is at an elevational angle and gravity is used to keep it moving to its destination (i.e., no pumps are required).

High-density polyethylene pipe – A type of pipe made from thermoplastic polymer that is durable, flexible, and has high levels of impermeability.

Impact driving (or hammering) – A method of pile driving that involves use of equipment that typically involves a piston or ram and an anvil block with a driving cap. The piston or ram moves quickly upwards and falls onto the driving system and pile.

Line-stop equipment – Equipment used to stop flow along a pipe.

Liquefaction – A phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced, strong ground shaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments, as well as the magnitude of an earthquake. Saturated, unconsolidated silts, sands, silty sands, and gravels within 50 feet of the ground surface are most susceptible to liquefaction.

Outfall – A pipe structure that carries treated effluent into deep offshore locations for final disposal. Effluent from the Southeast Water Pollution Control Plant is discharged in central San Francisco Bay via the Southeast Bay Outfall.

Pile oscillation - A pile installation method in which a heavy-duty casing (equipped with cutting teeth along the bottom edge) is installed into the ground by partially rotating (back and forth in different directions) the casing while providing a downward force. The sediment inside the casing is then extracted and may be filled with concrete.

Pile rotation – A pile installation method in which a heavy-duty casing (equipped with cutting teeth along the bottom edge) is installed into the ground by fully rotating (in one direction) the casing while providing a downward force. The sediment inside the casing is then extracted and may be filled with concrete.

Primary treatment – Typically, the first major treatment step in a wastewater treatment plant after pretreatment. It is a mechanical (settling) process used to remove settleable solids. The primary clarification stage is to produce both a generally homogeneous liquid capable of being treated biologically and a sludge that can be separately treated or processed.

Seal wall – A vertical steel shoring wall that divides the southern cofferdam into two areas with watertight seals around two horizontal steel cases used to protect the installed pipelines.

Secondary treatment – The treatment of wastewater after primary sedimentation/primary clarification. Secondary treatment, also known as biological treatment, is designed to substantially degrade the biological content of the sewage that is typically derived from human waste, food waste, soaps, and detergent.

Sheet pile – Linear structural sections with interlocking edges joined to create a continuous wall or enclosure.

Storm drain – A pipe or system of pipes (separate from sanitary sewers) that carries stormwater runoff and other surface wash waters.

Storm surge – Storm surge occurs when persistent high winds and changes in air pressure push water toward the shore. This can raise the water level near the shoreline by several feet and may persist for several days. The degree of storm surge depends on the severity of the storm as well as tidal levels at the time of the storm.

Subsidence – A gradual settling or sudden sinking of the ground surface because of underground material movement.

Support pile (or pile) – A long, often cylindrical structure that can be composed of steel, timber, or concrete that can support and structurally stabilize connected aboveground features.

Stormwater – Stormwater is a term used to describe water that originates during rain events. Stormwater that does not soak into the ground becomes surface runoff, which either flows into surface waterways or is channeled into the collection system.

Suspended solid – Suspended material removed from wastewater; also used to describe the residue after each treatment stage.

Tapping tee – Equipment used to tap into an existing pipeline for isolation purposes.

Treated effluent – Wastewater that has been treated through a purification process to remove contaminants and suspended solids.

Vibratory driving (or hammering) – A method of installing and removing piles by using small longitudinal vibration motion. The equipment contains a system of rotating eccentric weights within a housing attached to the pile head that allow only vertical vibrations to be transmitted into the pile.

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INITIAL STUDY

Southeast Bay Outfall Islais Creek Crossing Replacement Project
Planning Department Case No. 2016-011136ENV

A. PROJECT DESCRIPTION

A.1. OVERVIEW

The San Francisco Public Utilities Commission (SFPUC) is proposing the Southeast Bay Outfall Islais Creek Crossing Replacement Project (proposed project). The proposed project would install two new high-density polyethylene and steel pipelines adjacent to and beneath Islais Creek to replace two existing wastewater pipelines that have reached the end of their useful lives. The pipelines are crucial segments of the SFPUC's Southeast Bay Outfall system, which conveys treated effluent from the Southeast Water Pollution Control Plant (southeast plant) to the San Francisco Bay. The SFPUC is proposing replacement of the pipelines crossing Islais Creek and installation of new associated equipment to improve the reliability of the Southeast Bay Outfall system.

A.2. PROJECT SITE AND LOCATION

The proposed project is located in and adjacent to the Islais Creek Channel, immediately west of the Islais Creek Bridge in the Bayview/Hunter's Point neighborhood of southeast San Francisco (refer to Figure 1). Islais Creek was historically the largest body of water in San Francisco but was filled following the 1906 earthquake and is now largely converted to an underground culvert. The channel is currently exposed only in Glen Canyon Park and the Bayview/Hunter's Point neighborhood.

Islais Creek, which is a dead-end slough, is connected to San Francisco Bay and is tidally influenced. Where the proposed project site is located, the creek is approximately 30 feet deep. The creek and creek bed have been contaminated by industrial development from the late 19th century through the 20th century[1,2] and is currently designated as a toxic hot spot by the San Francisco Bay Regional Water Quality Control Board.[3]

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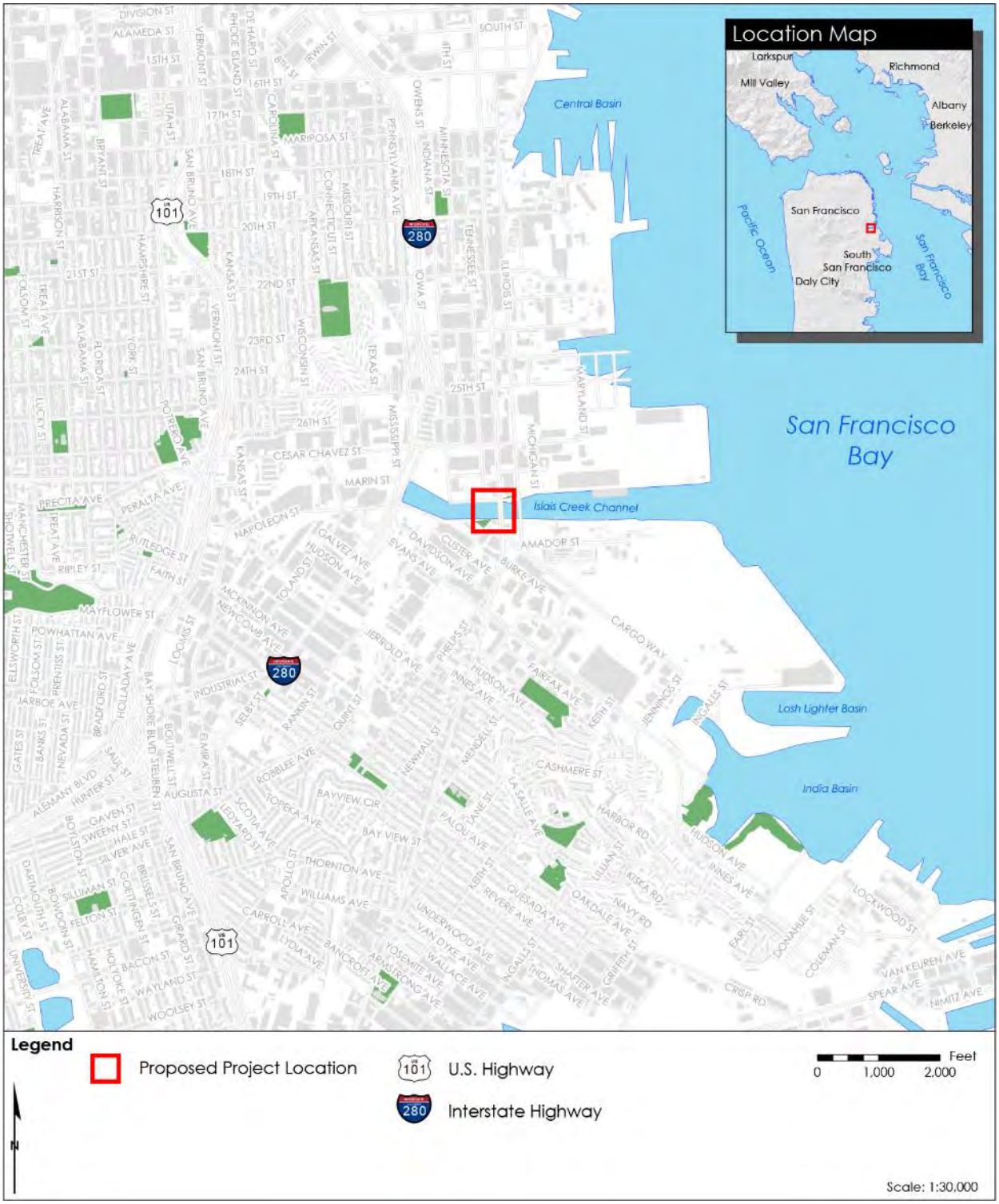
1 SFGate, *S.F. History Lesson Runs Through Islais Creek*, January 14, 2009, *https://www.sfgate.com/homeandgarden/article/S-F-history-lesson-runs-through-Islais-Creek-3176646.php*, accessed December 2, 2019. This reference and all other references in this initial study, unless otherwise noted, are available for review at https://tinyurl.com/SEO-Islais-Creek-Project.

2 New York Times, *Islais Creek*, November 10, 2010, *https://www.nytimes.com/2010/11/28/us/28bcintel.html*, accessed December 2, 2019.

3 State Water Resources Control Board, *Consolidated Toxic Hot-Spots Cleanup Plan, Volume I: Policy, Toxic Hot-Spots List and Findings*, June 1999, *https://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_9/2003/ref1332.pdf*, accessed December 2, 2019.

FIGURE 1. PROPOSED PROJECT LOCATION AND VICINITY



SOURCE: U.S. Geological Survey, NED 1/3 Arc Second DEM Raster dataset, 2013; U.S. Geological Survey, National Hydrography Dataset Waterbodies GIS dataset, 2016; Tele Atlas North America, Inc., U.S. and Canada Detailed Streets GIS dataset,2018; Bay Area Open Space Council, Bay Area Cities GIS dataset, 2011.

The portion of Islais Creek between Third Street and I-280 contains elevated levels of ammonia, dieldrin, hydrogen sulfide, polycyclic aromatic hydrocarbons, and chlordane.[4,5]

Numerous piles are visible above the water line within the Islais Creek Channel. Other debris and sunken boats have been identified below the water line. Islais Landing, located along the southern shore of Islais Creek within the proposed project area, includes a pile-supported floating dock owned by the SFPUC and a gravel beach (part of the Islais Creek Park) owned by the Port of San Francisco. The dock extends into Islais Creek from Islais Creek Park, located west of the SFPUC Islais Creek Booster Station (booster station[6]). The intended use of the dock is to provide boat landing facilities; however, in practice, the dock is used primarily for recreational fishing, and the adjacent gravel beach is typically used for kayak launching.[7] Islais Creek Park, which encompasses the landing, also provides a public viewing area, picnic facilities, and small watercraft storage. The SFPUC Quint Street Outfall, an offshore effluent discharge point housed within a 12-foot by 6-foot rectangular concrete structure, is located in Islais Creek just north of Islais Creek Park, approximately 40 feet west of the floating dock. Buried utilities on the south side of Islais Creek include water and gas pipelines, electrical lines, and communication and power conduits. Overhead electrical lines and railroad tracks run along Quint Street and Third Street. Several transportation companies and lumber retailers also maintain yards along Islais Creek. Additional information regarding surrounding land uses is provided in Section B.1, Islais Creek and Vicinity, below.

The Islais Creek Bridge and the Illinois Street Bridge are operable drawbridges that control marine vessel access into and out of the Islais Creek Channel and provide pedestrian, bicycle, vehicle, and rail access across the channel.

A.3. BACKGROUND

The SFPUC Wastewater Enterprise operates and maintains San Francisco's combined sewer system,[8] which collects and treats both wastewater and stormwater. San Francisco's system includes three treatment facilities: the southeast plant, the Oceanside Water Pollution Control Plant, and the North Point Wet Weather Facility. The southeast plant has a wet-weather treatment capacity of 100 million gallons per day (mgd) for *primary treated*[9] effluent and 150 mgd for *secondary treated*[10] effluent. During dry weather, all effluent receives secondary treatment; the effluent is discharged to San Francisco Bay via the Southeast Bay

4 San Francisco Bay Regional Water Quality Control Board. *Category 5 2016 California 303(d) List of Water-Quality-Limited Segments*. April 26, 2017. *https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/2016_303d/category5_report.shtml*, accessed December 2, 2019.

5 San Francisco Public Utilities Commission, Systems Planning and Regulatory Compliance, *Draft Final Report: Sediment Investigations at Islais Creek and Mission Creek, 1998, 1999, 2000,* November 2002.

6 A structure that contains pumps to boost the pressure of a fluid flowing through inlet/outlet pipes to keep it moving towards its destination.

7 Port of San Francisco. 2018. *Parks and Open Space*. Available: *https://sfport.com/parks-and-open-spaces*.

8 A combined sewer system collects both sanitary wastewater and stormwater in a single conveyance system for treatment and discharge.

9 Primary treatment is the initial wastewater treatment process, using equipment (such as screens) to remove larger particles and then a floating process or sedimentation to facilitate extraction of these particles.

10 Secondary wastewater treatment, which occurs after wastewater has undergone primary treatment, purifies wastewater using a biological process to remove suspended solids and soluble organic matter, followed by implementation of aerobic biological processes to consume remaining impurities.

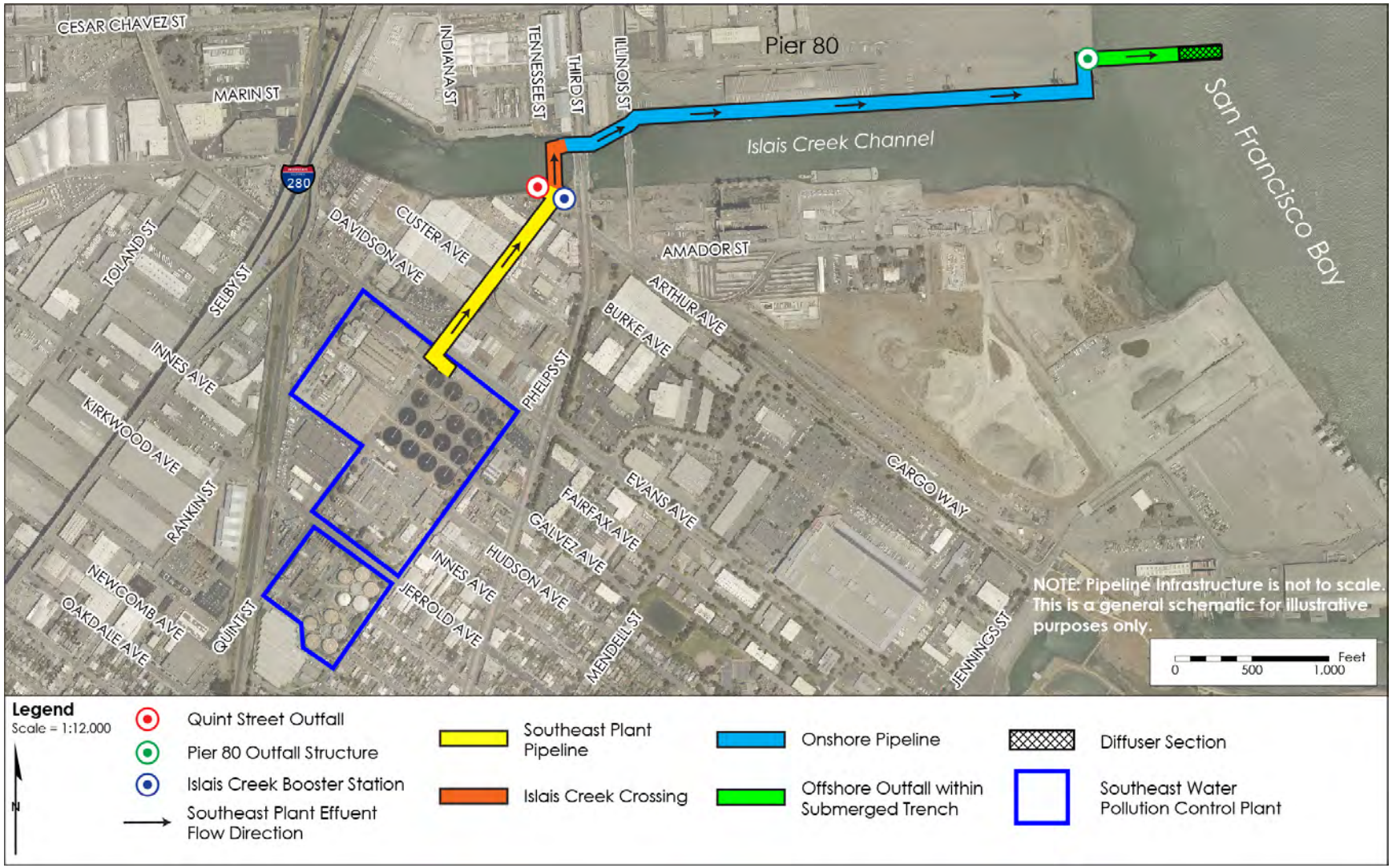
Outfall system. During wet weather, the primary effluent (100 mgd) and a small portion of the secondary effluent (up to 10 mgd) are discharged into the bay through this system; the remaining secondary effluent (140 mgd) is discharged to Islais Creek through the Quint Street Outfall.

The Southeast Bay Outfall system conveys treated effluent through the system's four pipeline components: a 6-foot-diameter gravity pipeline along Quint Street, the Islais Creek crossing pipelines, a 60-inch-diameter onshore pipeline, and an offshore outfall pipeline. As shown in Figure 2, treated effluent is pumped from the booster station to the Islais Creek crossing pipelines. These pipelines traverse Islais Creek and connect to the 60-inch-diameter onshore pipeline that runs east–west along the northern bank of Islais Creek before transitioning to the offshore outfall pipe that extends into San Francisco Bay.

A.4. Project Purpose and Need

The original Islais Creek crossing pipelines were composed of two ductile iron pipelines, one 36 inches in diameter and the other 42 inches in diameter, that were installed in 1967. The pipelines, which are buried at varying depths from up to 30 feet below the creek bed to exposed at the southern shoreline, are supported on timber and steel piles. In July 2015, the SFPUC repaired a leak in the 36-inch-diameter pipeline. During the repair process, additional damage was discovered. Another repair effort was completed in 2017. The SFPUC determined that the pipelines had reached the end of their useful lives and needed to be replaced. Before pipeline replacement could be initiated, the SFPUC detected an additional leak in the 36-inch-diameter pipeline in October 2018 and requested an emergency declaration to inspect, survey, design, and repair the pipeline. In June 2019, as part of the emergency work, SFPUC installed a temporary approximately 300-foot-long, 48-inch-diameter, high-density polyethylene bypass pipeline across Islais Creek. The bypass pipeline, which was placed along the bottom of the creek bed and secured using concrete anchors, was installed as a temporary pipeline to divert effluent flow from the damaged 36-inch-diameter pipeline. The bypass pipeline was tied into the existing 36-inch-diameter pipeline at the northern and southern banks of Islais Creek. Construction of the bypass pipeline was completed in October 2019. As part of the emergency work, approximately 15 feet of the existing 36-inch-diameter pipeline extending from the top of the bank to below the water line on both the north and south banks was capped, cut, and disposed of and the segment under the creek bed was abandoned in place with a 3-foot concrete plug on both ends. The proposed project would permanently replace the deteriorated pipelines that cross Islais Creek and make necessary upgrades to the associated system to avoid unpermitted discharges to the creek and ensure compliance with its National Pollutant Discharge Elimination System (NPDES) permit for discharging treated wastewater effluent to San Francisco Bay.

FIGURE 2. SOUTHEAST BAY OUTFALL SYSTEM



SOURCE: Tele Atlas North America, Inc. U.S. and Canada Detailed Streets GIS dataset, 2018; California Department of Fish and Wildlife, California NAIP Aerial Imagery; SFPUC, Islais Creek Channel Crossing Contract Drawings General Plan and Profile, 1966; SFPUC, SEP Outfall Forcemain Modification Contract Drawings, 1989.

A.5. PROJECT COMPONENTS

The various components of the proposed project are shown in Figure 3 and described in detail below. The description is organized by the following project areas: Islais Creek crossing, northern creek bank, and southern creek bank. Specific project components include the following:

- Islais Creek crossing pipelines
- Subsurface sheet pile walls
- Tapping tee, vault, and associated manhole or Pier 80 outfall structure equipment
- Flow meter vault on south bank with sheet pile wall
- Vault on the north bank, air release/vacuum valves, and tie-in
- Rock slope protection (riprap) on both north bank and south bank
- Removal of aboveground portions of the 42-inch-diameter existing pipeline and the emergency bypass pipeline

A.5.1 Islais Creek Crossing

A.5.1.1 New Pipeline Installation

Two new 54-inch-diameter, high-density polyethylene and welded steel pipelines,[11] approximately 530 feet in length, would be installed across Islais Creek to replace the existing pipelines.[12] A profile view of the new pipelines is shown in Figure 4, p. 8.

High-Density Polyethylene Pipeline

The section of new pipeline installed within the creek bed would be composed of high-density polyethylene pipes. The depth of the creek bed is approximately 30 feet below the water surface elevation at the center of Islais Creek. The new pipelines would be underlain by bedding material and covered with crushed rock, riprap, and fill material to match the grade of the surrounding channel.

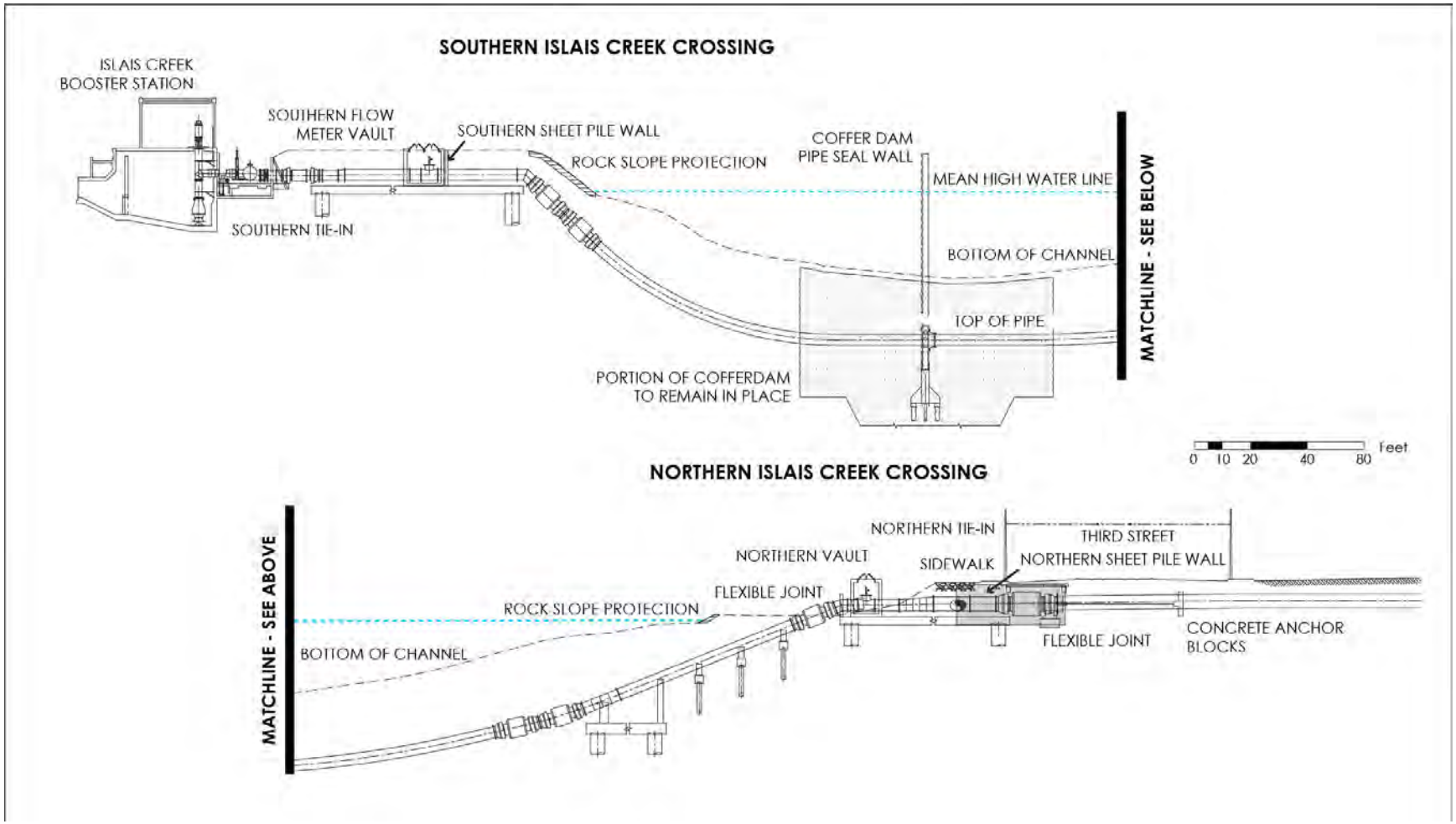
[11] The high-density polyethylene pipeline would be used in the horizontal creek bed and the welded steel material used for inclined portions of the creek banks.

[12] The term "existing pipelines" used herein refers to the 42-inch-diameter pipeline and the temporary emergency bypass pipeline, which are the only currently operational pipelines. The previous 36-inch-diameter pipeline was removed/abandoned as a part of the emergency work completed in 2019 and is no longer operational.

FIGURE 3. PROPOSED PROJECT COMPONENTS

SOURCE: Tele Atlas North America, Inc. U.S. and Canada Detailed Streets GIS dataset, 2018; California Department of Fish and Wildlife California NAIP Aerial Imagery, 2016; SFPUC, CAD dataset for Southeast Bay Outfall Islais Creek Crossing Replacement Project, 2019.

FIGURE 4. PROPOSED PIPELINE PROFILE VIEW



SOURCE: SFPUC, 95 Percent Design CAD Dataset for Southeast Bay Outfall Islais Creek Crossing Replacement Project, 2020.

Welded Steel Pipeline

The two welded steel pipeline sections at the northern and southern creek banks would be pile-supported.[13] The proposed pipelines would be supported on piles drilled to a depth of 80 to 110 feet and buried approximately 20 feet below the existing creek bed. The support piles would be made of steel or concrete. The steel pipeline sections would be protected from corrosion using a cathodic protection system and epoxy or polyurethane lining and coating.

A.5.1.2 Subsurface Sheet Pile Walls

As detailed below in "Project Construction", p. 13, steel cofferdam walls would be installed across Islais Creek on either side of the proposed pipeline alignment to accommodate installation of the new pipelines. After construction is complete, two subsurface segments of the steel cofferdam walls, each approximately 90 linear feet and located on both sides of the new pipeline alignment, would remain in place at the center of the creek (see Figure 3, p. 7). The steel sheet piles would be cut off approximately two to three feet below the creek bottom. These permanent features would protect the new pipelines and reduce risk of damage by preventing soil disturbance around the newly installed pipelines that would occur if the sheet piles were fully removed following construction of the project.

A.5.1.3 Existing Pipeline Abandonment and Removal

Once the new pipelines are fully installed and operational, the portions of the existing 42-inch-diameter pipeline[14] within the Islais Creek embankment and above the water line would be cut and removed, while the portions below the water line would be plugged and abandoned in place.

A.5.1.4 Temporary Pipeline (Emergency Bypass) Removal

After the two new pipelines are installed and operational, the temporary 48-inch- diameter emergency bypass pipeline installed in 2019 during the emergency work would be removed as part of the proposed project. The emergency bypass pipeline would be disconnected from the existing 36-inch-diameter pipeline where the pipeline is currently exposed on the southern bank of Islais Creek and near an existing manhole located on the northern bank immediately east of where the existing pipeline emerges from the wetted portion of the channel.

A.5.2 Northern Creek Bank

A.5.2.1 Northern Vault

A vault would be constructed on the northern bank of Islais Creek, adjacent to and west of the Third Street sidewalk. This concrete vault structure would be approximately 11 feet wide, 19 feet long, and 13 feet deep, and would be approximately 2 feet above grade. Vacuum/air relief valves would be installed to protect the pipeline from sudden changes in positive or negative (vacuum) pressure.

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13 The steel welded pile-supported pipes are required to resist seismic lateral spreading along the creek banks.

14 Removal and abandonment of the existing 36-inch-diameter pipeline was completed as part of the 2019 emergency bypass pipeline project.

A.5.2.2 Northern Tie-In

The two new 54-inch-diameter pipelines would be connected to the existing 60-inch-diameter onshore pipeline through a new approximately 33-foot-long, 60-inch-diameter tie-in pipeline segment, as shown in Figure 3, p. 7. The tie-in segment would be located near the western edge of Third Street near the northern end of the Islais Creek Bridge.

At the connection point of the new tie-in pipeline section and the existing onshore pipeline, a *flexible joint*[15] would be installed beneath the southbound lanes of Third Street. Two 1-inch-diameter anchor rods encased within a 3-inch-diamater steel casing would be installed alongside the existing onshore pipeline beneath the light-rail tracks under Third Street and connected to two concrete anchor blocks located beneath the northbound lanes of Third Street. These features would be installed to restrain the pipe during earthquakes.

A.5.2.3 Tulare Park Tapping Tee and Pier 80 Outfall Structure Equipment

Construction of the proposed project requires isolation of the 60-inch-diameter onshore pipeline to prevent flow of treated effluent and bay water through the pipe. To isolate the onshore pipeline, SFPUC would either install a tapping tee and temporary line-stop equipment at Tulare Park or install a steel plate and temporary pipelines at an existing outfall structure on Pier 80. Both options are described in further detail below.

Tulare Park Tapping Tee and Line-Stop Equipment

A *tapping tee*[16] and associated vault would be installed on the existing 60-inch-diameter onshore pipeline in Tulare Park, located north of Islais Creek and east of Third Street. The proposed tapping tee would be approximately 60 inches wide, 36 inches deep, and 60 inches long, and mounted in a vault supported by new concrete or steel pile supports and a pile cap. The tapping tee would facilitate isolation of the pipeline and prevent flows from the bay to the pipeline during both construction of the proposed project and future operation and maintenance activities. Temporary *line-stop equipment*[17] would be installed with the tapping tee for use during construction, as further described in "Tapping Tee and Temporary Line-Stop Equipment and Pier 80 Outfall Structure Equipment", p. 18, below. Once construction is complete, the line-stop equipment would be removed. The tapping tee would be maintained as a permanent feature, accessible from a new 36-inch-diameter manhole above the vault and approximately 1 foot above grade.

Pier 80 Outfall Structure Equipment

As an alternative to installing the tapping tee in Tulare Park, SFPUC may instead isolate the 60-inch-diameter onshore pipeline at an existing underground outfall structure located on Pier 80, just west of where the onshore pipeline discharges treated effluent into the bay. A steel plate would be inserted into the existing outfall structure at Pier 80 along the 60-inch-diameter pipeline. The steel plate, which would be installed from an existing manhole, would block bay water from entering the onshore pipeline. Once blocked, to evacuate treated effluent contained within the onshore pipeline, temporary pipelines and a

15 A flexible joint (or expansion joint) is a pipe joint composed of flexible material that allows for thermal pipe expansion, contraction, vibration, and seismic activity without compromising the integrity of the joint.

16 Equipment used to tap into the existing pipeline for isolation purposes.

17 Equipment used to stop flow.

trailer-mounted pump would be installed along the onshore pipeline west (upstream) of the steel plate to route the treated effluent around the steel plate, allowing it to be discharged into the bay. The pipelines and trailer-mounted pump would be located temporarily on the paved surface near the manhole during construction. After the proposed project is operational, the steel plate, temporary pipelines, and pump would be removed. Installation and removal of the steel plate, temporary pipelines and pumps would occur within the existing outfall structure; no excavation or other work at the structure would be required.

If the Pier 80 outfall structure is used to isolate the 60-inch-diameter pipeline, no excavation or tapping tee installation would be required at Tulare Park; however, Tulare Park may still be used as a staging area for equipment and materials under this scenario.

A.5.2.4 Bank and Slope Protection

Construction of the new vault along the northern bank would require the replacement of bank stabilization materials. Existing rock slope protection (riprap) would be replaced with new riprap to prevent erosion, improve slope stabilization, and to protect the pipeline.[18] Native plants such as willows and coyote brush would be planted on the new riprap to further stabilize the slope and landscape the area. Specifically, the voids in the riprap would be lined with a geotextile or geogrid fabric that would contain soil for planting. Seeds and/or plants would then be distributed within the voids.

SFPUC has designed the proposed project to protect the creek bank and project facilities from erosion and overtopping under 100-year storm surge conditions with medium to high risk aversion sea-level rise projected conditions of 3.9 to 4.5 feet by 2080.[19] The existing 10-foot-tall chain link fence along Third Street would be replaced in kind and a handrail would be installed immediately adjacent to the vault.

A.5.2.5 Underground Utility Relocation

Excavation for the northern tie-in beneath the southbound lanes of Third Street would require the temporary relocation of an existing underground Pacific Gas and Electric Company (PG&E) duct bank, which contains electrical facilities that supply power to the control tower for the Islais Creek Bridge, a PG&E street light circuit, and a San Francisco Municipal Railway transmission line. The electrical facilities would be temporarily relocated overhead on new cables supported by two temporary wood poles located north and south of the excavation along Third Street, as shown in Figure 3, p. 7. After construction, the temporary poles would be removed and the electrical facilities would be reinstalled underground in their original location, under the sidewalk on the west side of Third Street and the Islais Creek Bridge.

[18] The proposed project has been designed with riprap on the northern and southern banks of Islais Creek to match existing conditions, address the potential wind and wave action during a large storm from the northwest, and to address sea level rise through 2080, which assumes an elevation of 14.41 feet (100-year storm with an extreme tide level). The riprap is also required to protect the backfill that secures the pipeline and its flexible expansion joints. The exposure of the backfill could affect the fitting of the joints and ultimately increase the risk of pipeline failure during an earthquake. Thus, a non-erodible covering (e.g., riprap) is required at both shorelines.

[19] California Ocean Protection Council, *State of California Sea-Level Rise Guidance 2018 Update*, 2018, *http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf*. Accessed December 2, 2019.

A.5.2.6 Light-Rail Pole Relocation

Similarly, excavation for the northern tie-in beneath the southbound lanes of Third Street would also require the permanent relocation of a San Francisco Municipal Railway light-rail pole within the sidewalk on the northwest side of Third Street. As shown in Figure 3, p. 7, the light-rail pole would be relocated approximately 14 feet north of its current location and the cable system supporting the light-rail electrification system would be adjusted as necessary. The relocated pole would be steel with a mast arm supporting the signal for the light rail. Additionally, as shown in Figure 3, p. 7, approximately 72 linear feet of the subsurface portion of the sheet pile wall installed within the shoulder and sidewalk of Third Street during construction would be retained as a permanent sheet pile wall to support and stabilize the foundation of the light rail pole.

A.5.3 Southern Creek Bank

A.5.3.1 Southern Flow Meter Vault

A flow meter vault would be installed on the southern bank, west of the booster station. The vault would be pile supported. The top of the vault, which would be approximately 1 foot above grade, would be equipped with a hatch to provide access. The vault exterior would be approximately 14 feet long, 20 feet wide, and 13 feet high.[20] The vault would contain two flow meters and a transmitter to provide data to the supervisory control and data acquisition system at the booster station. In addition, the vault would contain a valve for air release and vacuum relief of the pipelines. The vault would also be equipped with a sump pump to pump out water that leaks into the vault.

A.5.3.2 Southern Tie-In

The new pile-supported steel pipelines within the southern creek bank would connect to the existing 36- and 42-inch-diameter pipelines immediately north of the concrete wall of the booster station, as shown in Figure 3, p. 7. New isolation valves would be installed within the booster station.

A.5.3.3 Electrical Conduit

Power would be obtained through a new electrical line between the booster station and the southern flow meter vault on the southern creek bank. The extension would require approximately 75 feet of buried conduit.

A.5.3.4 Bank and Slope Protection

Along the southern creek bank, a portion of the sheet pile wall installed during construction would be retained as a permanent sheet pile wall. As shown in Figure 3, p. 7, approximately 39 linear feet of sheet pile along the southern bank between the booster station and the new flow meter vault would remain in place permanently to protect the creek bank from erosion and overtopping during a 100-year storm surge in combination with 4.5 feet of sea-level rise. To provide additional slope stabilization, existing riprap would be replaced with new riprap and native plant landscaping would be planted on the new riprap.

[20] Internal vault dimensions would be approximately 8 feet long, 20 feet wide, and 10 feet high.

A.5.3.5 Pedestrian Walkway

The existing pedestrian footpath located along the southern shore of Islais Creek between Third Street and the booster station would be extended from the booster station to the entrance of the floating dock in Islais Creek Park, as shown in Figure 3, p. 7, and Figure 8, p. 57. The enhanced pedestrian walkway would provide access along the southern shoreline of the creek.

A.5.3.6 Temporary Dock Removal

The existing dock at Islais Creek Park on the southern creek bank would be dismantled and temporarily stored at one of the construction staging areas or on a barge during construction of the proposed project. The five existing piles currently supporting the dock would be removed prior to pipeline installation and later replaced with five new 18- by-18-inch square precast concrete piles that would be buried approximately 45 feet below grade. Public access to the dock would resume after pipeline construction, once reinstallation and repair of the dock is complete.

A.6. PROJECT CONSTRUCTION

A.6.1 Site Preparation

Site preparation would include clearing and grubbing along the southern shoreline of Islais Creek, directly west of the existing pipelines. Clearing and grubbing activities would consist of stripping the upper few inches of soil in vegetated areas on land. Stripped soils would then be temporarily stored and dried out at one of the staging areas described in "Project Work Areas", p. 21.

The existing dock and five piles supporting the dock would be removed. Existing pavement from the Third Street roadway, sidewalk, curb, and gutter, immediately north of the Islais Creek Bridge, would be saw cut and removed. The area where the line-stop equipment and tapping tee are proposed within Tulare Park would be cleared and grubbed. Existing underground utilities within the proposed construction areas would be protected or relocated prior to excavation.

A.6.2 Islais Creek Crossing Pipelines

Pipeline installation within Islais Creek would involve installing watertight cofferdams around the work area, dewatering the work area, installing pile supports, and excavating a trench for the pipelines. The two pipelines would be placed within the dewatered excavation and then backfilled to match the mudline elevation of the creek and upland banks. The major proposed project construction activities are described in further detail below.

A.6.2.1 Cofferdam Installation and Dewatering

Prior to working within the wetted portions of Islais Creek, a dry work area would be created to accommodate construction activities. Two large watertight cofferdams would be installed to create isolated work areas in the channel. Each cofferdam would be constructed approximately halfway across the creek channel, with only one cofferdam in place at a time. This is required to maintain vessel passage through the project area. Cofferdams would consist of steel sheet piles that would be installed to create an approximately 30- to 50-foot-wide dry work area around the alignment of the trench for the new pipelines.

The cofferdams would be installed to a depth of approximately 20 to 66 feet below the creek bottom. The sheet piles would be installed using a vibratory hammer or impact hammer on a crane operated from an adjacent barge or shoreline work site. The southern cofferdam would be constructed first and would include a *seal wall*[21] for staged construction across Islais Creek.

After each cofferdam segment is fully installed and sediments disturbed by installation of the sheet pile cofferdam have settled, water contained in the cofferdam would be pumped out to provide a dry work area. One or more high-volume pumps would pump water from within the cofferdam through a temporary pipeline to the adjacent shoreline. Water would be pumped to the south shore of the creek for any work south of the channel midpoint; water would be pumped to the north shore of the creek for any work north of the channel midpoint. The water would be pumped into large portable tanks (baker tanks), if necessary, to allow sediment settling prior to being discharged back into Islais Creek downstream of the work area, in accordance with the applicable permit(s). Alternatively, if the natural turbidity in Islais Creek is greater than 50 nephelometric turbidity units[22], water could be pumped directly from the cofferdam to the creek if the turbidity of the water within the cofferdam is within 10 percent of the turbidity of the receiving water, or as otherwise required by the Regional Water Quality Control Board. Approximately 3.5 million gallons of water in total is anticipated to be removed from within the cofferdams.

A.6.2.2 Excavation

After cofferdam dewatering is complete, a trench would be excavated along the adjacent uplands and the bed and banks of Islais Creek to the maximum depth of the new pipelines and associated bedding. The excavation within the north and south creek banks would be approximately 30 feet wide and 5 to 16 feet deep. The excavation would be approximately 30 feet wide across the entire Islais Creek Channel bottom and between 23 to 38 feet deep (depending on topographic variations within the creek bed) with the exception of the location of the mid-channel seal wall, where excavations would be up to 48 feet below the channel bottom over an area that is approximately 30 feet wide and 30 feet long. The total volume of sediment that would be excavated and exported offsite is provided in Table 1.

[21] The seal wall is a vertical steel shoring wall that divides the southern cofferdam into two areas with watertight seals around two horizontal steel casings, to protect the installed pipelines.

[22] Turbidity is measured in nephelometric turbidity unit. The instrument used for measuring it is called nephelometer or turbidimeter, which measures the intensity of light scattered at 90 degrees as a beam of light passed through a water sample.

TABLE 1. ESTIMATED SEDIMENT REMOVAL AND BACKFILL PLACEMENT

Activity	Location	Approximate Volume (cubic yards)
Sediment removal – haul offsite	Tulare Park tapping tee and line-stop equipment trench	80
	Excavation in Islais Creek bed and banks	14,000
Total Sediment Removal		**14,080**
Backfill import	Backfill excavation in Islais Creek bed and banks	11,900
	Backfill behind sheet pile wall adjacent to booster station	260
Rock slope protection, bedding, and stabilization	Bed and banks of Islais Creek	2,200
Total Imported Backfill		**14,360**

Source: SFPUC, Project Construction Details, 2019.

Backhoes would be used for onshore excavation, and a barge-mounted crane with a clamshell bucket or long-reach excavator would be used for excavation within Islais Creek. Excavated materials would be transferred to a *scow barge*[23], which would be moved by tugboats to a staging area, passing under Islais Creek Bridge during low tide. The scow barge would then transport the sediment to a staging area for temporary material handling, as described in "Project Work Areas", p. 21, or the sediment would be temporarily stockpiled on the scow barge. The sediments would be dried out at the staging area. All excavated sediments, hazardous and non-hazardous, would be hauled offsite, as described in "Sediment Storage and Disposal", p. 24, below. Excavations would be backfilled with imported clean fill material.

A.6.2.3 Pipeline Pile Installation

Within the excavated trench, a total of 33 steel piles would be installed to a depth of approximately 80 to 110 feet. These steel piles include 10 18-inch-diameter piles located along the northern shoreline and mid-channel (to support the seal wall) and 23 60-inch-diameter piles along the northern and southern shorelines to support the two welded steel pipeline segments. The proposed project construction is designed to reduce risks of damage to nearby structures from vibration by limiting use of an impact hammer to the extent feasible. With the exception of four 18-inch-diameter piles installed mid-channel (for the seal wall),[24] all pile installation (including sheet pile installation) would begin by pre-drilling a hole to a depth of approximately 30 feet below the channel bottom. After insertion of the pile into the predrilled hole, the pile would achieve the appropriate pile depth using a combination of the gravitational pull of the pile's weight against the soft substrate of the channel bottom, pile rotation, pile oscillation, and/or use of a vibratory hammer. Limited use of an impact hammer may be required if refusal is met and the other methods are not able to reach the desired pile depth. Specifically, most piles would be installed by pre-drilling and vibratory driving; however, several 60-inch-diameter piles on the south shoreline, four 60-inch-diameter piles on the north side of the channel, and four 18-inch-diameter piles on the north side of the channel may require limited impact hammering to achieve design depth due to the presence of a subsurface interbedded sand

[23] A large, flat-bottomed boat with broad, square ends.

[24] Due to substrate composition located mid-channel, pre-drilling for pile installation is not feasible beneath the proposed seal wall.

lens. Once the design elevation is achieved, the inside of the pile would be augered out and all soil/sediment/debris would be removed from the piles. Steel reinforcement would be inserted into the pile, and concrete would be placed into the pile utilizing *tremie*[25] methods.

Where pile rotation or pile oscillation is used to install 60-inch-diameter piles, four temporary 18-inch-diameter *anchor piles*[26] would be installed around the location of the 60-inch-diameter pile. Anchor piles would be installed using a vibratory hammer, as well as removed using a vibratory hammer after the 60-inch-diameter pile is installed. Installation of anchor piles would not be necessary where vibratory or impact hammer are used.

Pipeline pile installation is estimated to occur for up to approximately 15 weeks over the duration of proposed project construction. Pile driving for the pipeline would occur in two phases, over two years (one phase for the north shoreline and the second phase for the south shoreline).

A.6.2.4 Pipeline Installation

The pipeline trench would be approximately 38 feet deep at the deepest point within Islais Creek with the exception of the mid-channel seal wall location where the trench would be up to 48 feet deep. Approximately 3 to 5 feet of bedding and stabilization material, consisting of 1.5-inch aggregate and geogrid fabric, would be installed at the base of the trench to a depth of approximately 10 feet below the pipeline. The 54-inch-diameter, high-density polyethylene pipelines would be installed in two segments within the channel, a northern in-channel segment and a southern in-channel segment. A pipeline seal wall would be installed approximately 20 feet north of the channel mid-point to connect the northern in-channel segment to the southern in-channel segment. The seal wall would be supported on piles. Pipeline segments would be mobilized to proposed project work areas, installed within the excavated trench, welded into place, inspected, protected with an applied coating, and tested for leaks. Once the new pipelines and conduit are installed, the pipelines would be covered with approximately 3 to 5 feet of crushed rock, then approximately 4 feet of rock riprap. The riprap would be covered with fill materials to match the grade of the surrounding channel.

The welded steel pipeline segments along the northern and southern creek banks would include a cathodic protection system, polyurethane or epoxy pipeline coating, and lining to protect against corrosion. Zinc anode columns would be buried on the northern and southern banks of the creek for cathodic protection. The anodes would be placed approximately 5 feet apart and connected to an above-grade test box, which would be connected to the new pipelines. Polyurethane or epoxy coating would conform to SFPUC coating standards and be applied primarily offsite, with repair and touch-up as needed onsite during construction.

A new segment of 60-inch-diameter pipeline would be installed on the north shore to connect the new 54-inch diameter pipelines to the existing 60-inch diameter onshore pipeline. The flexible joint, concrete pad, anchor rods, and concrete anchor blocks would be installed at the tie-in point and east along the existing onshore pipe beneath Third Street. The anchor rods would be installed approximately 7 feet below grade

[25] A method used to pour concrete underwater that avoids washout of cement from the mix due to turbulent water contact with the concrete while it is flowing.

[26] Support piles installed to resist lateral movement and guide installation of the permanent 60-inch-diameter pile.

and the anchor blocks approximately 10 feet below grade. The new pipe segment, flexible joint, concrete pad, and concrete anchor blocks would be installed using open-trench construction methods, which include saw cutting the pavement, excavating a trench with a small- or large-sized backhoe, shoring the excavation, installing the new pipe and support components, backfilling the trench, compacting the fill materials, and restoring the roadway surface. In order to avoid impacts to light-rail operations on Third Street, the anchor rods would be installed alongside the existing onshore pipe by using a directional drill that would extend beneath the light-rail tracks in the center of Third Street.

A.6.2.5 Cofferdam Removal and Retention

Following pipeline installation and backfill, a vibratory hammer would be used to remove the majority of the cofferdams, with the exception of a 90-foot-long section on either side of the new pipeline alignment at the connection point of the southern and northern in-channel pipeline segments, as shown in Figure 3, p. 7. This portion of the cofferdam would be retained and cut off approximately two to three feet below the creek bottom to provide additional protection of the buried pipeline.

A.6.3 Existing Pipeline Abandonment and Removal

A.6.3.1 Existing Pipeline

The existing 42-inch-diameter pipeline across Islais Creek would be abandoned in place once the new pipelines are installed and operational. The abandoned pipeline would be filled with fast-curing grout appropriate for use in marine environments or capped at either end using a concrete cap or plug. The portions of the existing 42-inch-diameter pipeline within the Islais Creek embankments and above the water line (approximately 80 linear feet) would be cut, removed, and transported to a landfill or recycled.

A.6.3.2 Emergency Bypass Pipeline Removal

After the new, permanent pipelines are installed and operational, the temporary 42-inch-diameter emergency bypass pipeline across Islais Creek would be removed. The pipeline would be evacuated of its contents and filled with air, floated to the creek surface, lifted, cut, removed, and transported to a landfill. The concrete blocks used to anchor the pipeline to the creek bed would also be removed and transported to a landfill. Components installed for the bypass pipeline, such as pilings at the northern and southern pipeline connection points and valves, may be reused for construction of the proposed project, if feasible, or cut off below the riprap.

A.6.4 Vaults, Isolation Valves, and Tapping Tee

A.6.4.1 Vault Installation

As previously described, the proposed project would require two new vault structures for pipeline operation. A backhoe would excavate an area for installation of each vault and the excavation would be shored using sheet piles. Any shallow groundwater encountered in the excavation would be removed with pumps (see additional detail regarding dewatering in "Dewatering and Discharge Plan", p. 25). To support vault structures, 60-inch-diameter steel piles would be installed within each excavation using the same methods as those described in "Pipeline Pile Installation", p. 15, which include gravitational pull, pile rotation, pile oscillation, and/or use of a vibratory hammer. Limited use of an impact hammer may be

required if refusal is met using other methods. Vault structures would be cast in place, or precast vaults would be lowered into the excavation by crane. Additional details for each vault structure are provided below.

Northern Vault

An open pit measuring approximately 20 feet long, 28 feet wide, and 19 feet deep would be excavated on the northern bank. Two 60-inch-diameter steel piles, extending approximately 110 feet below ground, would be installed to support the vault structure. The concrete vault structure would be installed within the excavation. The concrete vault would be primarily below grade, with the top of the vault extending approximately 2 feet above the elevation of the adjacent Third Street sidewalk.

Southern Flow Meter Vault

An open excavation measuring approximately 23 feet long, 29 feet wide, and 20 feet deep would be dug on the southern bank for installation of the flow meter vault. Two 60-inch-diameter piles, extending approximately 110 feet below ground, would be installed to support the vault structure. The concrete vault structure would be installed within the excavation. Once installed, the concrete vault would be embedded approximately 7.5 feet below the new finished grade, with the top of the vault extending approximately 1 foot above the new finished grade.

A.6.4.2 Southern Valves in Booster Station

As previously described, isolation valves would be installed on each pipeline within the booster station. Because the existing pipelines within the booster station are not buried, no excavation is anticipated for installation of these valves. Instead, some removal of the existing concrete slab under the pipelines may be required to accommodate the new valves.

A.6.4.3 Tapping Tee and Temporary Line-Stop Equipment and Pier 80 Outfall Structure Equipment

As previously described, to isolate the 60-inch-diameter onshore pipeline, SFPUC would either install a tapping tee and temporary line-stop equipment at Tulare Park or install a steel plate and temporary pipelines at an existing outfall structure on Pier 80. Construction activities for both options are presented below.

Tapping Tee and Temporary Line-Stop Equipment

Under this scenario, temporary line-stop equipment and a tapping tee would be installed on the existing 60-inch-diameter pipeline in Tulare Park, east of Third Street, to allow the SFPUC to isolate the outfall system during construction of the new pipeline. The tapping tee would consist of a steel collar that would be installed over the existing 60-inch-diameter reinforced-concrete pipe. The tapping tee would have an approximately 36-inch-diameter opening to allow a new hole to be drilled into the existing concrete pipe and to connect the new pipeline. The tapping tee and line-stop installation would require a temporary sheet pile shoring system. An approximately 20-foot-long, 20-foot-wide, and 15-foot-deep trench would be excavated for the tapping tee installation; any shallow groundwater encountered in the excavation would be removed with pumps (see additional detail regarding dewatering methodology in "Cofferdam Installation and Dewatering", p. 13). Four 18- by 18-inch square precast concrete piles would be installed to a maximum depth of 90 feet at the tapping tee to provide foundational support. The line-stop equipment

would be removed once construction of the new pipeline is complete. The tapping tee would become a permanent feature, accessible from a manhole.

Pier 80 Outfall Structure Equipment

The existing Pier 80 outfall structure consists of a gate structure on the existing 60-inch-diameter reinforced-concrete pipe. The gate structure would be cleaned, and an approximately 8.5-foot-long and 5-foot-wide steel plate would be installed within the gate structure to prevent flow of water from the bay. Approximately 10 3- to 4-inch-diameter pipes would be welded to the gate structure and would connect to an 8- to 12-inch-diameter manifold that would be attached to a trailer-mounted pump. The pump would pump effluent through the pipelines from the upstream side of the gate structure and discharge effluent to the downstream side of the gate. No excavation would be required under this scenario. Once construction is complete, the steel plate, pipelines, and pump would be removed, and the onshore pipeline would resume operation.

A.6.5 Electrical Conduit

Power would be extended from the booster station to the flow meter vault on the southern creek bank via approximately 75 feet of buried electrical cable within an approximately 5-inch-diameter conduit. The conduit would be installed within a 12-inch-wide and 3-foot-deep trench. The conduit trench would be backfilled with aggregate (or similar materials), and the area would be graded, landscaped, and/or paved to match proposed post-construction conditions.

A.6.6 Underground Utility Relocation

An approximately 3-foot-wide, 98-foot-long, 4-foot-deep trench would be excavated along the west side of Third Street to remove the existing electrical facilities for relocation. Two approximately 20-foot-tall temporary poles, one south and one north of the excavation along Third Street, would be directly buried to a depth of 5 feet. The electrical facilities would be installed overhead between the two temporary poles during construction of the proposed project. Once construction is complete, the electrical facilities would be reinstalled in its original belowground location and the trench would be backfilled, and the temporary poles would be removed.

A.6.7 Light-Rail Pole Relocation

The existing light-rail pole would be removed and the hole backfilled. A new approximately 30-foot-tall light-rail pole would be installed approximately 14 feet north of the original pole location. The new steel pole would be installed on an approximately 36-inch-diameter aboveground concrete footing. The pole foundation would require an approximately 3-foot-deep excavation. An auger would then be used to drill an additional 8 feet to install the pole to a total depth of 11 feet. The cable system supporting the light-rail electrification system would be adjusted as necessary to accommodate the relocated pole. Approximately 72 linear feet of sheet pile (remaining from the cofferdams installed during construction) would be retained belowground on the northern bank to support the foundation of the relocated light-rail pole.

A.6.8 Bank and Slope Protection

Approximately 39 linear feet of sheet pile on the southern bank, a portion of the cofferdam installed during construction, would remain in place as a permanent retaining wall to protect the creek bank from erosion. After construction is complete, the sheet pile wall would be cut off at-grade. Fill would be placed in the area behind the sheet pile wall and graded to match the ground-level grade at the booster station. To provide additional slope protection, riprap would be installed on both the northern and southern banks using a backhoe.

A.6.9 Pedestrian Walkway

The improved and lengthened pedestrian walkway would be constructed using decomposed granite and would extend approximately 204 feet to reach the entrance of the floating dock in Islais Creek Park. The path of the walkway would be graded and leveled and decomposed granite would be applied to the path and compacted.

A.6.10 Dock Reinstallation

The dock at Islais Creek Park that was temporarily disassembled and stored would be reassembled with some minor repairs atop the new pile supports. The five piles supporting the existing dock, which would be removed during site preparation, would be replaced with five new 18- by 18-inch square precast concrete piles that would be buried approximately 45 feet deep using a vibratory hammer on a barge-mounted crane. The locations of the new piles would be the same as the existing locations, except for one pile on the southern end of the dock that would be moved approximately 3 feet to avoid the newly installed pipelines. The dock would be reassembled and repaired using hand tools.

A.6.11 Construction Access

A.6.11.1 Islais Creek and Upland Access

Access to the project area would be required from both the north and south sides of Islais Creek to facilitate construction, while avoiding existing in-creek features, including the drawbridges at Illinois and Third streets, exposed piles, submerged piles, and the Quint Street Outfall. Upland access to the tie-in locations at the booster station would also be required. Access would be needed from both the creek and upland areas to construct the northern vault on Third Street. Project construction would require closure of both southbound lanes on Third Street between Marin Avenue and Cargo Way for a total of approximately nine months (one seven-month and one two-month period). During this period, the two northern travel lanes may be closed instead of the two southern lanes. Northbound traffic, or southbound traffic depending on the nature of the lane closure, would be rerouted east to Illinois Street, or as an alternative, west to Cesar Chavez Street and Evans Avenue. The light rail could continue to use Third Street during the lane closure. All lane closures would be limited to nighttime hours with the exception of three weeks during the seven-month period, at which time both southbound lanes on Third Street between Marin Avenue and Cargo Way would be closed during daytime and nighttime hours. A portion of Islais Creek Park is anticipated to be closed for the duration of proposed project construction; it would be used temporarily for staging activities and water treatment (see “Construction Staging Areas”, p.21). Tulare Park would be closed for approximately 80 days for construction if the tapping tee and temporary line-stop equipment were

constructed but would be closed for the duration of project construction if it were used as a staging area. Access to both parks would be restored once construction of the proposed project is complete.

Marine vessels, including crane and materials barges, scow barges, and small boats, would be mobilized to the project site from nearby piers. The marine vessels would travel under the Islais Creek and Illinois Street bridges during low tide. If security at the project site is adequate, marine vessels may remain onsite overnight or be moored at Pier 94/96 or Pier 80, depending on coordination with the Port of San Francisco. Raising of the Islais Creek Bridge and Illinois Street Bridge for marine vessel access is not anticipated to be required for the proposed project.

A.6.11.2 Construction Truck and Construction Vehicle Access Routes

Construction trucks would access the project area via Cesar Chavez Avenue from either I-280 or U.S. 101 or via Third Street from U.S. 101. Truck access routes that would be used during construction of the proposed project are identified in Figure 5 and include Evans Avenue, Rankin Street, Quint Street, Tennessee Street, and Marin Street.

A.6.12 Project Work Areas

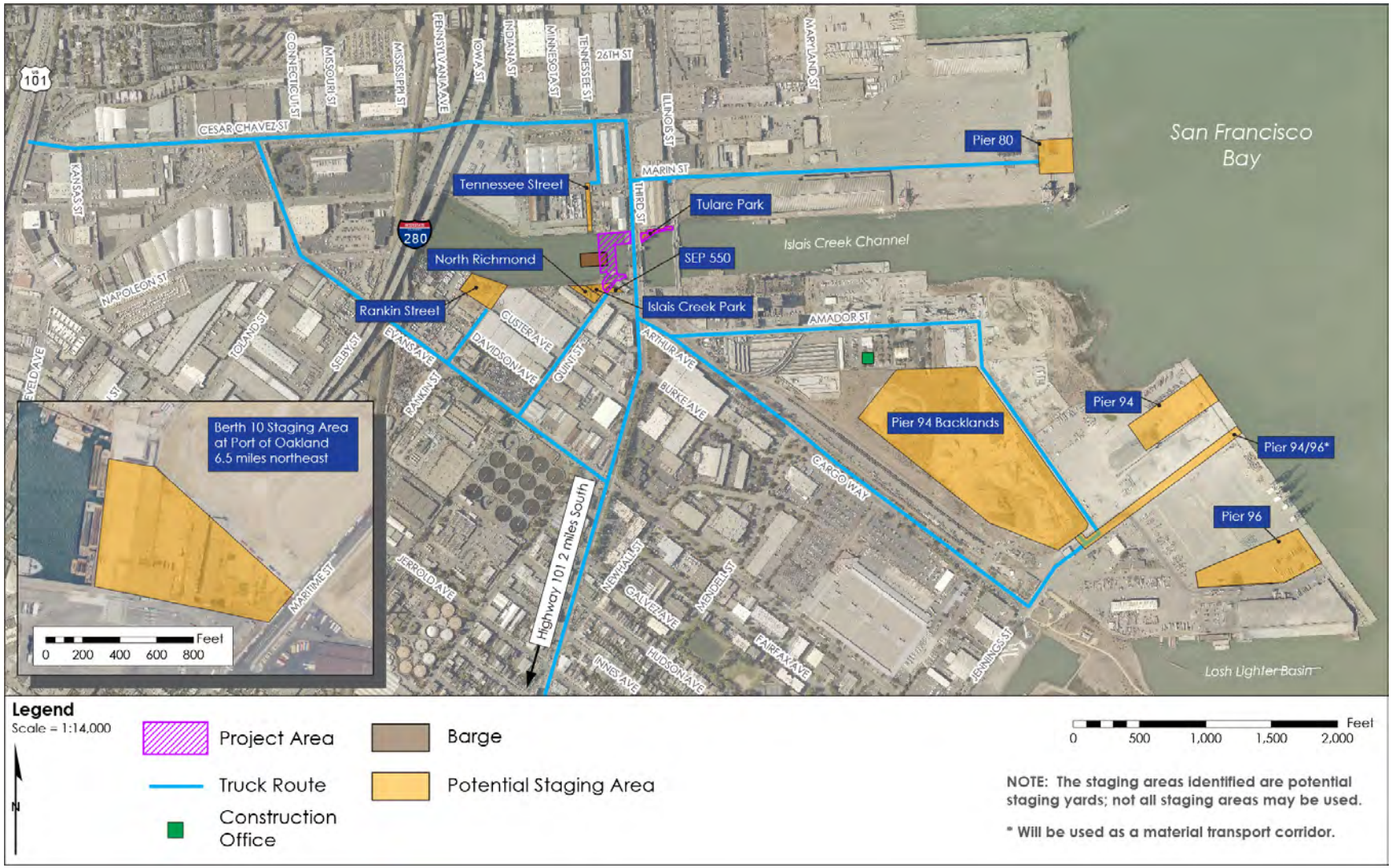
As shown in Figure 1, p. 2, and Figure 5, the work area for the new pipelines is within the creek channel and parallel to the Islais Creek Bridge, approximately 150 feet west of the bridge. The work area on the southern bank of Islais Creek includes the portions of Islais Creek Park adjacent to the booster station. The work areas on the northern bank of Islais Creek include an approximately 0.08-acre (3,300-square-foot) area in and adjacent to the creek bank that is surrounded by industrial uses just west of Third Street, as well as a portion of the southbound lane and sidewalk and a portion of the northbound lane on Third Street, just north of the Islais Creek Bridge. To isolate the onshore pipeline, either Tulare Park, located between Third Street and the Illinois Street Bridge, or the outfall structure site on Pier 80 would be used.

A.6.13 Construction Staging Areas

The proposed project would require temporary use of other sites for materials handling, equipment staging, and vehicle parking. Between approximately 2 to 7.5 acres would be required for handling material excavated from the Islais Creek Channel, and approximately 1 acre would be required for construction staging and parking. Staging areas would be within or adjacent to Islais Creek and within 2 miles of the proposed project (see Figure 5). The SFPUC has identified several potential staging areas because it is uncertain which areas would be available at the time of construction. Potential staging area locations, current land uses, and the proposed temporary uses for potential staging areas are provided below.

- **Tennessee Street Staging Area**. The approximately 0.3-acre site is adjacent to the northern bank of Islais Creek where Tennessee Street terminates. The area could be used for construction equipment staging, and vehicle parking. The site is owned by the Port of San Francisco and currently used for port-related storage, transport, and other industrial purposes.

FIGURE 5. STAGING AREAS AND CONSTRUCTION TRUCK ROUTES



SOURCE: Tele Atlas North America, Inc. U.S. and Canada Detailed Streets GIS dataset, 2018; California Department of Fish and Wildlife, California NAIP Aerial Imagery, SFPUC, CAD dataset for Southeast Bay Outfall Islais Creek Crossing Replacement Project, 2019.

- **Islais Creek Park Staging Area.** An approximately 1-acre staging area would be located within Islais Creek Park, adjacent to the southern bank of Islais Creek. The potential staging area would be used for construction equipment staging and vehicle parking. The site is currently a recreational facility; it would require temporary closure (up to 27 months) of this portion of the park to the public during construction. Access to the southern shore of Islais Creek through Islais Creek Park would be maintained during construction, as shown on Figure 11, p. 124.

- **Tulare Park Staging Area.** An approximately 0.2-acre staging area would potentially be located in Tulare Park, adjacent to the northern bank of Islais Creek between Third Street and Illinois Street. The park would be used as a staging area for equipment and materials only if the tapping tee and associated manhole are not constructed as part of the proposed project (as described in "Pier 80 Outfall Structure Equipment", p. 10). Tulare Park is currently a publicly accessible recreational facility and use of it as a staging area would require temporary closure of the park for the duration of construction.

- **North Richmond Staging Area.** The approximately 0.8-acre site borders the Islais Creek Park staging area to the west. The potential staging area could be used for construction equipment staging and vehicle parking.

- **Southeast Plant 550 Staging Area.** The approximately 0.5-acre site, which is owned by the Port of San Francisco, is just south of the booster station and could be used for construction equipment staging and vehicle parking.

- **Rankin Street Staging Area.** The approximately 1-acre site is adjacent to the southern bank of Islais Creek, on the west side of Rankin Street. The area could be used for construction equipment staging, and vehicle parking during construction of the proposed project. The site is currently being used for materials handling for other SFPUC construction projects.

- **Pier 80 Staging Area.** An approximately 1.6-acre staging area would be located on Pier 80 and would encompass the work area for the Pier 80 outfall structure. The area would be used for vehicle parking and equipment staging. The site is owned by the Port of San Francisco and currently used for port-related storage, transport, and other industrial purposes.

- **Pier 96 Staging Area.** The approximately 5-acre site is at Pier 96, just south of the eastern terminus of Jennings Street. The area could be used for sediment processing and drying prior to transport to an appropriate landfill. The site is owned by the Port of San Francisco and currently used for port-related storage, transport, and other industrial purposes.

- **Pier 94/96 Material Transport Corridor.** The approximately 30-foot-wide access corridor at Pier 94/96 could be used to transport materials to and from the Pier 94 Backlands staging area. Up to 3.5 acres could be used during construction of the proposed project. The site is owned by the Port of San Francisco and currently used for port-related storage, transport, and other industrial purposes.

- **Pier 94 Staging Area.** The approximately 5-acre site is at Pier 94, north of the Pier 94/96 material transport corridor. The area could be used for sediment processing and drying prior to transport

to an appropriate landfill. The site is owned by the Port of San Francisco and currently used for port-related storage, transport, and other industrial purposes.

- **Pier 94 Backlands Staging Area.** The site is located southwest of Amador Street, west of Pier 94. Up to 5 acres at the site could be used for proposed project-related sediment disposal, treatment processing, and preparation for transport to appropriate landfills via truck or rail. The site is owned by the Port of San Francisco and currently is partially vacant and partially used by Recology for concrete recycling operations as part of its sustainable crushing facility. The SFPUC would use the vacant portion of this proposed site.
- **Marine Vessels.** Various barges and scow barges may be temporarily staged within Islais Creek to accommodate construction activities and materials handling. Barges would carry construction equipment, such as cranes and pile drivers, and other materials for use during in-water work. Scow barges would be used to handle and transport excavated materials. During active construction, barges and scow barges may remain onsite if security is adequate or moored at Pier 94/96 or Pier 80. Various best management practices specific to marine vessel use would be employed to protect water quality (see Section E.17, Hydrology and Water Quality).
- **Berth 10 Port of Oakland Staging Area.** If staging areas in the vicinity of the proposed project are not available at the time of construction, the SFPUC may use a staging area managed by the Port of Oakland. The area could be used for sediment processing and drying prior to transport to an appropriate landfill.

A.6.14 Sediment Storage and Disposal

Excavated sediments would be temporarily stockpiled at construction staging areas prior to offsite transport and disposal. Stockpiled sediments would be covered with plastic sheeting or tarps, have berms installed around the perimeter, and plastic sheeting installed beneath the stockpile if placed on pervious surfaces.

The appropriate disposal site for excavated sediments and other debris generated during construction of the proposed project would be selected by the contractor based on the waste classification of the material and which landfills are accepting the particular wastes at the time of construction. Once sediments/materials are dried on the site, samples would be taken for chemical analysis to determine appropriate disposal methods for sediment and water dewatered from sediment. Hazardous materials would be transferred either by truck or rail to the nearest landfill that is licensed to accept the waste. Excavated sediments classified as hazardous waste could be trucked approximately 1 mile to the Port of San Francisco transfer facility on Cargo Way (at Pier 94) for hauling by rail to an appropriate facility for disposal or trucked directly. The closest *class I* landfill (for hazardous waste) is approximately 215 miles from the project site in Kern County. Spoils with polychlorinated biphenyls exceeding the allowable amount for disposal in California, if any, would be sent to Chemical Waste Management of the Northwest[27] in Arlington, Oregon, approximately 650 miles from the project area, or the East Carbon Development Corporation Landfill in East Carbon, Utah, approximately 850 miles from the project area. Any sediment

[27] This facility is a *Resource Conservation and Recovery Act/Toxic Substances Control Act Subtitle C* landfill that manages hazardous waste, including polychlorinated biphenyls.

that is not classified as hazardous waste and not reused as backfill would be transported by truck to the Altamont Landfill in Livermore, California (non-hazardous waste, *class II* and *III* landfill). Debris that is not contaminated would be hauled to either the Recology Hay Road Landfill in Solano County, or to the Republic Corina Los Trancos (Ox Mountain) Landfill in Half Moon Bay, California.

A.6.15 Dewatering and Discharge Plan

In accordance with the SFPUC standard construction measures described in "SFPUC Standard Construction Measures", p. 27, a detailed plan would be developed to manage water generated during construction, including water removed from within the cofferdams in Islais Creek and shallow groundwater encountered during trenching. The water would be treated, if necessary, to meet regulatory requirements prior to discharge to Islais Creek. Solid materials remaining at the bottom of the tanks and dewatered water from sediment would be disposed of offsite, as described in "Dewatering and Discharge Plan", p. 24, above. Discharge of effluent from the Quint Street outfall during dry weather periods (if needed) would be conducted in accordance with SFPUC's NPDES permit.[28]

A.6.16 Construction Schedule, Work Hours, and Work Force

A.6.16.1 Construction Duration and Seasonal Restrictions

Construction of the proposed project would require approximately 27 months of active construction. The total duration of proposed project construction would require an approximately 3.5-year period (expected to begin in 2021) because in-channel work would occur only between June and November, which is the environmental work window for construction in the San Francisco Bay, established by the resource agencies. The construction schedule may be modified because of additional regulatory agency restrictions regarding the timing of the work, or other scheduling constraints.

A.6.16.2 Construction Hours, Workforce, and Lighting

The number of daily workers would range between one and 160 workers per day, depending on the phase of construction. On average, approximately 27 workers would be onsite each day during construction. Construction would generally occur Monday through Friday from 7 a.m. to 8 p.m. as well as Saturdays and Sundays, as needed, during these same hours. Approximately nine months of evening or nighttime work would be required to meet the construction timeframe because of limitations on the duration of in-channel work and closures along Third Street and the Islais Creek Bridge. The proposed project would adhere to noise levels established in the San Francisco Noise Ordinance.[29] Pile driving would generally occur between 7 a.m. and 3:30 p.m. and would not occur at night. Lighting would be required at night for construction (when nighttime construction is needed) and for security purposes.

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[28] No. CA0037664, Order No. R2-2013-0029, for City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, Bayside Wet Weather Facilities and Wastewater Collection System, adopted August 14, 2013

[29] San Francisco Police Code, article 29: Regulation of Noise.

A.6.16.3 Temporary Facility Shutdown

The tie-in for the new pipelines to the existing booster station and the existing pipelines at the new northern vault would require a shutdown at the booster station. The booster station is designed to handle a shutdown of eight to 12 hours during dry-weather flows when the average flow is expected to be approximately 50 to 60 mgd. The SFPUC anticipates that a one-week outage would be allowed by the San Francisco Bay Regional Water Quality Control Board to complete tie-ins during dry-weather flow conditions. During the outage, discharges to Islais Creek via the Quint Street Outfall would most likely be required.

A.6.17 Construction Equipment

Construction of the proposed project would require the use of heavy construction equipment, which would be powered by both fuel and electricity. The equipment expected to be used during construction is summarized in Table 2, below. Equipment would comply with the Clean Construction Ordinance (chapter 25 of the San Francisco Environment Code (refer to "SFPUC Standard Construction Measures", p. 27). Specifically, land-based equipment would be outfitted with Tier 4 engines as part of the proposed project's compliance with the Clean Construction Ordinance.

TABLE 2. EXPECTED EQUIPMENT SUMMARY TABLE

Construction Equipment	Equipment Use
Crane	Lift heavy equipment and materials
Crane barge	House crane(s) within Islais Creek during construction in the creek
Dump truck	Remove sediment and construction waste
Flat-bed truck	Transport workers, material, equipment, supplies
Forklift	Lift materials
Generator	Provide power for tool/equipment operation
Impact hammer (90 to 400 ton)	Install cofferdam, sheet-pile walls, and piles for pipelines, vaults, and boat dock within Islais Creek where use of a vibratory hammer is not feasible
Loader	Move sediment
Long-reach excavator	Excavate from barge
Materials barge	House materials and construction equipment for work in Islais Creek
Pickup truck	Transport workers, material, equipment, supplies
Pumps	Remove water from work area
Small backhoe	Excavate
Scow barge	Move sediment to staging areas
Small boat	Provide crew access to in-channel work area
Tugboat	Move materials barge
Vibratory hammer (85 to 450 ton)	Install cofferdam and piles

Source:
SFPUC, Project Construction Details, 2019.

A.6.18 Construction Period Energy Use and Supply

Construction of the proposed project would rely on electrical, diesel, and gas-powered equipment. Electrical power would be obtained from PG&E or SFPUC during construction activities. The use of electric pumps for the removal of water and sediment from the cofferdams would consume the bulk of electricity during construction of the proposed project. Construction equipment, tugboats, and generators would be powered by diesel. Pickup trucks, small boats, and flat-bed trucks would be powered by gas.

A.6.19 SFPUC Standard Construction Measures

SFPUC has adopted standard construction measures, with the purpose of ensuring that environmentally responsible practices are applied to all SFPUC projects.[30] Because the measures apply to all SFPUC projects, including projects located within San Francisco and other urban areas as well as projects located in rural and natural areas, such as SFPUC watershed lands, the measures are necessarily broad. As such, the measures may be tailored to fit specific projects. Some measures may not apply in whole or in part to all projects. In addition, these measures may be superseded by more detailed project-specific mitigation measures and/or regulatory permit requirements. The standard construction measures, as well as any mitigation measures adopted as part of the California Environmental Quality Act (CEQA) review process, are required to be implemented pursuant to the construction contract specifications for all SFPUC projects. The applicability of the standard construction measures to the proposed project is considered under the related resource topic analyses. The SFPUC Standard Construction Measures memorandum is provided in **Appendix A**.

The SFPUC would also conduct all construction activities in compliance with applicable regulations and ordinances. Relevant requirements would be included in the contract specifications issued for construction of the proposed project.

1. **Seismic and Geotechnical Studies.** All projects will prepare a characterization of the soil types and potential for liquefaction, subsidence, landslide, fault displacement, and other geological hazards at the project site and be engineered and designed as necessary to minimize risks related to safety and reliability due to such hazards. As necessary, geotechnical investigations will be performed.

2. **Air Quality.** All projects within San Francisco city limits will comply with the Construction Dust Control Ordinance. All projects outside the city will comply with applicable local and state dust control regulations. All projects within city limits will comply with the Clean Construction Ordinance. Projects outside city limits will comply with San Francisco or other applicable thresholds for health risks. All projects, both within and outside city limits, will comply with either San Francisco or other applicable thresholds for construction criteria air pollutants.

[30] San Francisco Public Utilities Commission, *SFPUC Standard Construction Measures*, Memorandum from Harlan L. Kelly, Jr., general manager, to Michael Carlin, Juliet Ellis, Barbara Hale, Kathryn How, Tommy Moala, Steven Ritchie, and Eric Sandler, July 1, 2015. Available in Appendix A of this initial study.

To meet air quality thresholds, all projects (as necessary) will implement air quality controls that will be tailored to the project, such as high-tier engines; verified diesel emissions control strategies, such as diesel particulate filters; customized construction schedules and procedures; and low-emissions fuel.

3. **Water Quality.** All projects will implement erosion and sedimentation controls that will be tailored to the project, such as fiber rolls and/or gravel bags around storm drain inlets, silt fences, or other such measures to prevent discharges of sediment and other pollutants to storm drains and all surface waterways, such as San Francisco Bay, the Pacific Ocean, water supply reservoirs, wetlands, swales, and streams. As required, based on project location and size, a stormwater control plan (in most areas of San Francisco) or a stormwater pollution prevention plan (outside of San Francisco and in certain areas of San Francisco) will be prepared. If uncontaminated groundwater is encountered during excavation activities, it will be discharged in compliance with applicable water quality standards and discharge permit requirements.

4. **Traffic.** All projects will implement traffic control measures to maintain traffic and pedestrian circulation on streets affected by construction of the project. Traffic control measures may include, but not be limited to, using flaggers and/or construction warning signage; scheduling truck trips during non-peak hours to the extent feasible; maintaining access to driveways, private roads, and off-street commercial loading facilities by using steel trench plates or other such methods; and coordinating with local emergency responders to maintain emergency access. For projects in San Francisco, the measures will also, at a minimum, be consistent with the requirements of the San Francisco Municipal Transportation Agency's (municipal transportation agency) *Blue Book*. Any temporary rerouting of transit vehicles or relocation of transit facilities would be coordinated with the applicable transit agency, such as the municipal transportation agency. All projects will obtain encroachment permits from the applicable jurisdiction for work in public roadways.

5. **Noise.** All projects will comply with local noise ordinances for regulating construction noise. The SFPUC shall undertake measures to minimize noise disruptions at nearby neighbors and sensitive receptors during construction. These efforts could include using best available noise control technologies on equipment (i.e., mufflers, ducts, acoustically attenuating shields), locating stationary noise sources (i.e., pumps and generators) away from sensitive receptors, erecting temporary noise barriers, and other such measures.

6. **Hazardous Materials.** Where there is reason to believe that site soil or groundwater may contain hazardous materials, the SFPUC shall undertake an assessment of the site in accordance with applicable local requirements (e.g., Maher Ordinance) or use reasonable commercial standards (e.g., Phase I and Phase II assessments, as needed). If hazardous materials will be disturbed, the SFPUC shall prepare and implement a plan for treating, containing, or removing the hazardous materials in accordance with any applicable local, state, and federal regulations so as to avoid any adverse exposure to the material during and after construction. In addition, any unidentified hazardous materials encountered during construction will likewise be characterized and appropriately treated, contained, or removed to avoid any adverse exposure. Measures will also be implemented to prevent the release of hazardous materials used during construction, such as

storing them pursuant to manufacturer recommendation, maintaining spill kits onsite, and containing any spills that occur to the extent safe and feasible, followed by collection and disposal in accordance with applicable laws. The SFPUC will report spills of reportable quantity to applicable agencies (e.g., the Governor's Office of Emergency Services).

7. **Biological Resources.** All project sites and the immediately surrounding area will be screened to determine whether biological resources may be affected by construction. A qualified biologist will carry out a survey of the project site, as appropriate, to note general resources and identify whether habitat for special-status species and/or migratory birds is present. In the event that further investigation is necessary, the SFPUC will comply with all local, state, and federal requirements for surveys, analysis, and the protection of biological resources (e.g., Migratory Bird Treaty Act, Federal and State Endangered Species Acts, etc.). If necessary, measures will be implemented to protect biological resources, such as wildlife exclusionary fencing, work zone buffers, bird deterrents, monitoring by a qualified biologist, and other such measures. If tree removal is required, the SFPUC would comply with any applicable tree protection ordinance.

8. **Visual and Aesthetic Considerations.** All project sites will be maintained in a clean and orderly state. Construction staging areas will be sited away from public view where possible. Nighttime lighting will be directed away from residential areas and have shields to prevent light spillover effects. Upon project completion, project sites on SFPUC-owned lands will be returned to their general pre-project condition, including re-grading of the site and re-vegetation or re-paving of disturbed areas to an extent consistent with SFPUC's Integrated Vegetation Management Policy. However, where encroachment has occurred on SFPUC-owned lands, the encroaching features may not be restored if inconsistent with the SFPUC policies applicable to management of its property. Project sites on non-SFPUC land will be restored to their general pre-project condition so that the owner may return them to their prior use, unless otherwise arranged with the property owner.

9. **Cultural Resources.** All projects that will alter a building or structure, produce vibrations, or include soil disturbance will be screened to assess whether cultural resources are or may be present and therefore could be affected, as detailed below.

   Archeological Resources. No archeological review is required for a project that will not entail ground disturbance. Projects involving ground disturbance will undergo screening for archeological sensitivity, as described below, and implement, as applicable, SFPUC Standard Archeological Measures I (Discovery), II (Monitoring), and III (Testing/Data Recovery). Standard Construction Measure I will be implemented on all projects involving ground disturbance. Implementation of Standard Archeological Measures II and III will be based on the screening process described below for projects assessed as having the potential to encounter archeological resources and/or project sites where an archeological discovery occurs during construction.

   Projects involving ground disturbance will initially be screened to determine whether there is demonstrable evidence of prior ground disturbance at the project site to the maximum vertical and horizontal extent of the current project's planned disturbance. For projects where prior complete

ground disturbance has occurred throughout areas of planned work, the SFPUC will provide evidence of the previous disturbance in the categorical exemption application, and no further archeological screening will be required.

For projects on previously undisturbed sites or sites where the depth/extent of prior ground disturbance cannot be documented, or the planned project-related ground disturbance will extend beyond the depth/extent of prior ground disturbance, additional screening will be carried out as detailed below. The additional screening will be conducted by the SFPUC's qualified archeologist (i.e., meeting the Secretary of the Interior's Professional Qualifications Standards [36 Code of Federal Regulations 61]); if a consultant, the archeologist will be selected in consultation with the San Francisco Planning Department's Environmental Review Officer (ERO) and meet the criteria or specialization required for the resource type, as identified by the ERO.

a. The SFPUC's qualified archeologist will conduct an archival review of the project site, including Environmental Planning's (EP's) archeological geographical information system data and/or California Historical Resources Information System records as well as other archival sources, as appropriate. The qualified archeologist will also conduct an archeological field survey of the project site if, in the archeologist's judgment, this is warranted by site conditions. Based on the results, the archeologist will complete and submit to EP a preliminary archeological checklist (version dated April 2015, to be amended in consultation with the ERO, as needed). This checklist will include recommendations regarding the need for archeological testing as well as additional research and/or treatment measures, consistent with Archeological Measures I, II, and III, which are to be implemented by the project to protect and/or treat significant archeological resources identified as present within the site and potentially affected by the project.

b. The EP archeologist (for projects within the city) or the ERO's archeological designee (for projects outside the city) will conduct a preliminary archeological review of the preliminary archeological checklist and other sources as warranted, concur with the checklist's recommendations, and/or amend the checklist in consultation with the SFPUC archeologist or archeological consultant to require additional research, reports, or treatment measures as warranted, based on his/her professional opinion.

c. The SFPUC shall implement the preliminary archeological checklist/preliminary archeological review recommendations prior to and/or during project construction consistent with Standard Archeological Measures I, II, and III, and consult with the EP archeologist in selecting an archeological consultant, as needed, to implement these measures.

d. Ground-disturbing activities in archeologically sensitive areas, as identified through the above screening, will not begin until the required preconstruction archeological measures of the preliminary archeological checklist/preliminary archeological review (e.g., preparation of an archeological monitoring plan, archeological treatment plan, and/or an archeological research design and data recovery plan) have been implemented.

Historic (Built Environment) Resources. For projects within the city that include activities with the potential for direct or indirect effects to historic buildings or structures, initial CEQA screening will include a review, for the project footprint and up to one parcel surrounding the footprint of the City and County of San Francisco (CCSF) online planning map, all relevant survey data, preservation address files, and other pertinent sources for previously-identified, historically significant buildings and building and structures more than 45 years old that have not been previously evaluated. For projects outside of the City, initial CEQA screening will include a records search of EP's CCSF historical resources data, the California Historical Resources Information System, and other pertinent sources for historically significant or potentially significant buildings and structures older than 45 years.

For projects that would modify an existing building or structure that has been determined by EP as being a significant historical resource (i.e., appears eligible to qualify for the California Register of Historical Resources), or that would introduce new aboveground facilities in the vicinity of a significant historical resource, or that would affect previously unevaluated buildings or structures more than 45 years old, the SFPUC will retain a qualified architectural historian (defined as meeting the Secretary of the Interior's Professional Qualification standards and, if a consultant, also selected in consultation with the ERO) to conduct a historical resource evaluation. SFPUC will submit the project description and the historical resources evaluation to the CCSF Planning Department Preservation Planner or to the ERO's-designated qualified architectural historian to assess potential effects. Where the potential for the project to have adverse effects on historic buildings or structures is identified, the CCSF Planning Department Preservation Planner or the ERO's designee will consult with SFPUC to determine if the project can be conducted as planned or if the project design can be revised to avoid the significant impact, and will comply with applicable procedures set forth in Historic Architectural Resource Measure I. If these options are not feasible, the project will need to undergo further review with EP and mitigation may be required. If so, the project would not qualify for a Categorical Exemption from CEQA review.

Where construction will take place in proximity to a building or structure identified as a significant historical resource but would not otherwise directly affect it, the SFPUC will implement protective measures, such as but not limited to, the erection of temporary construction barriers to ensure that inadvertent impacts to such buildings or structures are avoided.

To evaluate the potential for ground settlement resulting from pile driving, a geotechnical study for the proposed project was completed in accordance with Standard Construction Measure 1.[31] In accordance with the recommendations in the geotechnical study, the SFPUC and/or its contractors will prepare and implement a Settlement and Vibration Monitoring Plan to assess the potential for damage to nearby buildings and critical utility infrastructure from project construction. The plan will require: 1) engineering analysis to develop site-specific vibration damage thresholds and performance criteria for stoppage of work; 2) installation of settlement and vibration monitoring equipment at specific locations to detect movement of existing structures and utilities during construction; and, 3) pre-construction and post-construction photographic surveys to document existing conditions of structures and utilities and identify

[31] AGS, Vibration Study and Recommendations Report, Southeast Outfall Islais Creek Crossing. January 24, 2020.

extent of damage, if any, from project construction. These requirements, as well as repair of damaged structures/utilities to pre-project conditions caused by the project, would be incorporated into the project construction contracts to assess, monitor, and repair any damage associated with project construction on nearby buildings and critical utility infrastructure.

A.7. Operations and Maintenance

A.7.1 Islais Creek Pipelines

The existing wastewater conveyance functionality of the booster station and pipelines would be maintained until the proposed project is constructed. After completion of construction, the booster station would pump effluent via the newly constructed pipelines across Islais Creek. The new pipelines would operate in the same manner as the existing pipelines.

A.7.2 Operating Hours, Workforce, and Maintenance

The proposed pipelines and appurtenances would operate 24 hours per day, seven days a week, similar to existing operations. The proposed pipelines and appurtenances would be unmanned and would not require a permanent workforce. These facilities would be operated remotely.

SFPUC would maintain the proposed pipelines throughout the life of the proposed facilities. Maintenance of one line could be completed while the other line remains in operation. Maintenance would be conducted on an as-needed basis by existing SFPUC personnel and would not require any additional personnel.

A.7.3 Energy Use and Supply

Operation of the new pipelines would require electricity on the south side of Islais Creek for operation of the flow meters and other pipeline monitoring equipment. Energy would be provided by extending power from the booster station. The proposed project would not require any additional energy use at the booster station for pumping effluent through the Southeast Bay Outfall system.

A.8. Regulatory Actions and Approvals

The permits and approvals anticipated to be required from federal, state, and local agencies are listed below. SFPUC would also obtain any other regulatory approvals, as required by law. The SFPUC project approval constitutes the first approval action for the proposed project for the purposes of CEQA, pursuant to San Francisco Administrative Code section 31.04 (h).

A.8.1 Federal Actions and Approvals

- U.S. Army Corps of Engineers (Army Corps):
    - Authorizations under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act (nationwide permit)
- National Oceanic and Atmospheric Administration, National Marine Fisheries Service:

  - Federal Endangered Species Act section 7 consultation, including essential fish habitat consultation (informal consultation or biological opinion)
  - Authorization under the Marine Mammal Protection Act (incidental harassment authorization)
- U.S. Fish and Wildlife Service:
  - Federal Endangered Species Act section 7 consultation (informal consultation or biological opinion)

A.8.2 State Actions and Approvals

- Regional Water Quality Control Board, San Francisco Bay Region:
  - Authorization under section 401 combined Clean Water Act (water quality certification and waste discharge requirements)
  - Construction general permit and stormwater pollution prevention plan, if more than 1 acre of land is disturbed in areas outside of the combined sewer system (i.e., the separate sewer area)
- San Francisco Bay Conservation and Development Commission:
  - Administrative permit
- State Historic Preservation Office:
  - Section 106 National Historic Preservation Act compliance
- California Department of Fish and Wildlife:
  - Section 2081 incidental take permit
  - Section 1600 Lake and Streambed Alteration Agreement

A.8.3 Regional and Local Actions and Approvals

- San Francisco Public Utilities Commission:
  - Adoption of CEQA findings and mitigation monitoring and reporting program
  - Approval of the proposed project
- Port of San Francisco
  - Memorandum of understanding/licensing agreement for the short-term use of staging areas
  - Lease for the temporary use of Pier 96 for a spoils processing area
  - Encroachment permit for work within Port lands

  - A 66-year memorandum of understanding for the long-term use of land where new facilities would be installed

- Other city departments
  - SFPUC would consult/coordinate with San Francisco departments, including without limitation San Francisco Public Works, Department of Building Inspection, Department of Public Health, and the municipal transportation agency, to ensure that soil disturbance and site mitigation, street and sidewalk improvements, on-street parking modifications, dust control, noise control, and building construction complies with substantive requirements of applicable local laws.

B. PROJECT SETTING

B.1. ISLAIS CREEK AND VICINITY

The project site is located within Islais Creek, between Third Street and I-280. The project site is situated in a light industrial area and surrounded by both public and private parcels. Buildings along the south side of Islais Creek, directly south of the project site, are occupied by Super Sightseeing Tours; ARB, a construction company; art studios; Gentle Giant Moving Company; and Polarica, a food delivery service. The booster station and Islais Creek Park are located directly east and west of the project site, respectively. The north side of Islais Creek is occupied by lumber and transportation companies. A concrete batch facility, Cemex, is located approximately 0.5 mile east and the southeast plant is located approximately 0.5 mile south of the project site. San Francisco Fire Department Station 25 is located just east of the project site across Third Street on the south side of Islais Creek.

Existing utilities in the area include overhead and underground power lines, auxiliary water supply system lines for potable water and fire suppression, combined sewers, and pipelines for treated effluent. The major underground utilities in the area near the booster station include water lines for potable water and fire suppression and pipelines for treated effluent. A 16-inch-diameter auxiliary water supply system line along Third Street branches to the west along Arthur Avenue and Quint Street. Two parallel gravity conveyances for treated effluent run along Quint Street. The first conveyance is a 6- by 12-foot box culvert for treated effluent that terminates at a concrete structure, the Quint Street outfall, on the southern bank of Islais Creek, west of the booster station. The other conveyance is a 6-foot-diameter line for treated effluent that terminates at the booster station.

Parks and open space adjacent to the project site include Tulare Park, Islais Creek Park, and Islais Creek Promenade. Tulare Park provides a paved walking and bicycle path and bench seating. Islais Creek Park includes picnic benches, a gravel beach, storage for small watercraft, and a boat dock. The Islais Creek Promenade consists of a landscaped walking and bicycle path along the waterfront. The following transit lines, operated by the San Francisco Municipal Railway, are located within 0.25 mile of the project site:

- T-Third Street light rail Metro train
- 14X-Mission Express
- 8BX-Bayshore B Express
- 19-Polk Muni buses
- 44-O'Shaughnessy
- 48-Quintara/24th Street
- 23-Monterey
- 54-Felton
- 91-3rd Street/19th Avenue Owl

The nearest regional transit station is the 22nd Street Caltrain station, approximately 0.70 mile north of the project site. The closest bicycle route is on Illinois Street, approximately 450 feet east of the project site.

B.1.1 Other Projects in Vicinity

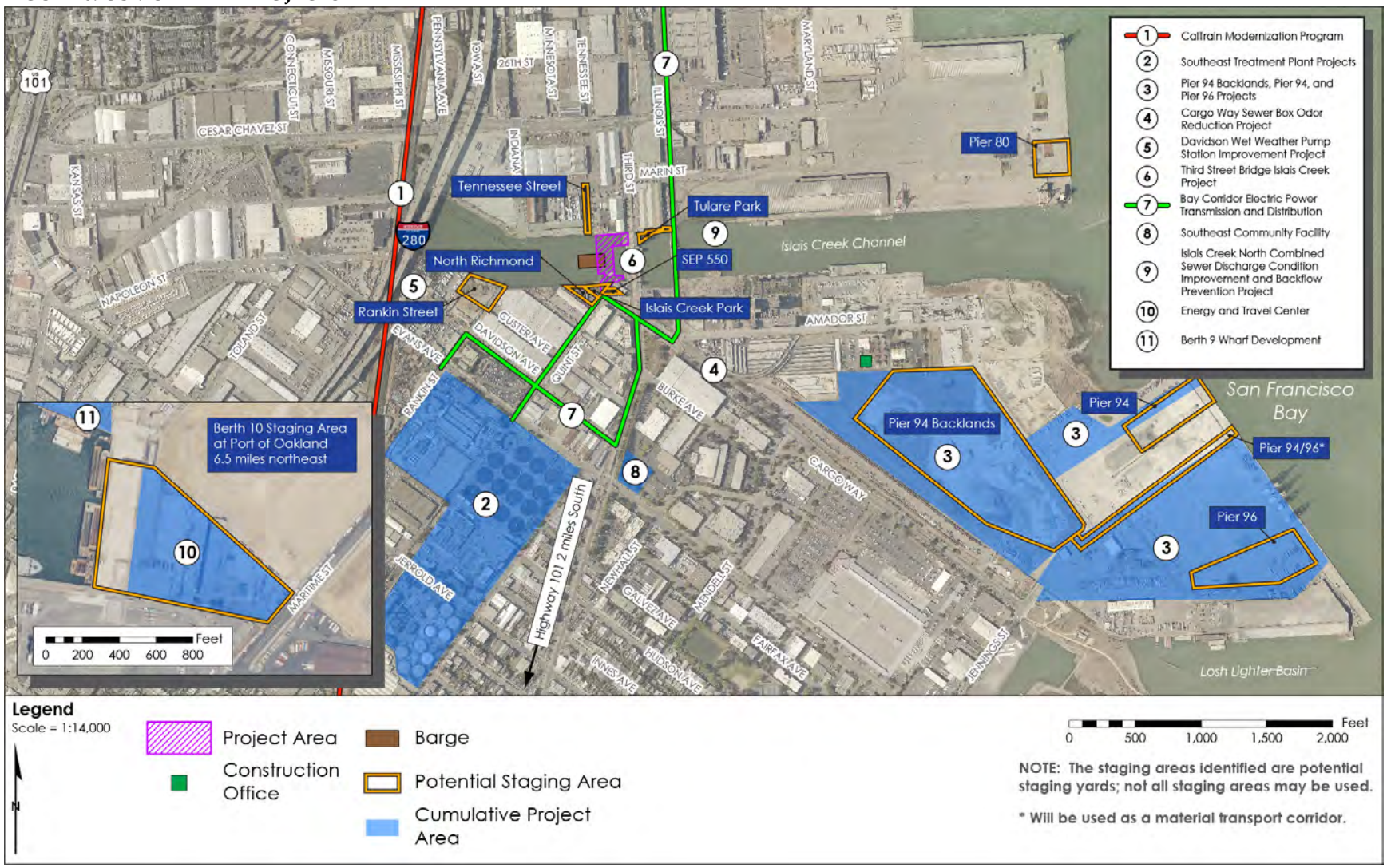
CEQA Guidelines section 15130(b)(1) indicates that a cumulative impact analysis should be based on either (1) a list of past, present, and reasonably foreseeable probable future projects producing closely related

impacts that could combine with those of a project, or (2) a summary of projections contained in a general plan or related planning document. The following factors were used to determine an appropriate list of individual projects to be considered in this cumulative analysis:

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

The proposed project, in combination with past, present, and reasonably foreseeable future projects in the vicinity of the proposed project, could result in cumulative impacts. Past and present projects are considered in the baseline conditions; Table 3**,** p. 38, lists the reasonably foreseeable future cumulative projects, which were identified based on the above referenced factors, that may be considered in determining cumulative environmental effects that are more localized. Refer to Figure 6 for the locations of the cumulative projects. The cumulative projects within 0.25 mile of the proposed project are anticipated to be under construction at the same time as the proposed project. No construction has been scheduled for the cumulative projects at the Port of Oakland.

FIGURE 6. CUMULATIVE PROJECTS



SOURCE: Tele Atlas North America, Inc., U.S. and Canada Detailed Streets GIS dataset, 2018; California Department of Fish and Wildlife, California NAIP Aerial Imagery, 2016; SFPUC, CAD dataset for Southeast Bay Outfall Islais Creek Crossing Replacement Project, 2019.

TABLE 3. CUMULATIVE PROJECTS

Project No. on Map	Project Name (Jurisdiction)	Project Description	Construction Schedule
1	Caltrain Modernization Program (Caltrain Peninsula Corridor Joint Powers Board)[a,b]	The project would convert Caltrain trains from diesel to electric and provide multi-unit trains for service between the Fourth and King Street station in San Francisco and the Tamien station in San Jose. The project would require the installation of 130 to 140 single-track miles of overhead contact system for the distribution of electrical power to the new electric rolling stock. The project would include the installation of vertical steel poles on either side of the Caltrain tracks; electrical conductors would later be suspended from the poles approximately 0.25 mile west of the proposed project. The electrical infrastructure provided by this project would be compatible with future high-speed rail service. Improvements under the California High-Speed Rail Project between San Francisco and San Jose would affect the same segment of the Caltrain tracks as the electrification project; however, the timing and scope of the improvements required under the high-speed rail project are uncertain at this time.	2017 through 2022
2	Southeast Treatment Plant Projects (SFPUC)	As part of the Sewer System Improvement Program, the SFPUC is planning multiple projects to improve the reliability and efficiency of the southeast plant. These projects include: **Headworks Replacement Project.** The project would demolish the existing headworks and construct a new 250 mgd, all-weather headworks wastewater treatment facility. Construction began in November 2017 and is expected to be completed in March 2025. **Biosolids Digester Facilities Project**. The project would replace or relocate biosolid treatment facilities with more efficient, modern technologies and facilities that would be designed to produce *class A* biosolids. Construction is scheduled for March 2020 through May 2025. **Power-Feed and Primary Switchgear Upgrades.** The project would upgrade the existing southeast plant's electrical infrastructure. Construction is scheduled for July 2020 through September 2023. **Seismic Reliability and Condition Assessment Improvements**. Activities could include rehabilitation (such as concrete spalling and crack repair) as well as seismic retrofit of process tanks and buildings. Construction began in September 2019 and is expected to be completed in January 2022.	January 2017 through May 2025

Project No. on Map	Project Name (Jurisdiction)	Project Description	Construction Schedule
3	Pier 94 Backlands, Pier 94, and Pier 96 Projects[c]	Multiple projects are planned at the Pier 94 Backlands, Pier 94, and Pier 96 proposed staging areas. The projects include the following: **Pier 94 Backland Improvements Project (Port of San Francisco)**. The Port of San Francisco proposes improvements to 23 acres of unimproved land that was previously used as a landfill. Proposed uses for the site included construction laydown, truck marshalling, auto storage, self-storage, construction material recycling, and eco-industrial uses, such as batching operations and biofuel production. The site would be filled and graded to create a level surface using existing materials stockpiled at the site. A new road, utilities, and stormwater management facilities would be constructed to prepare the site for future uses. This site is currently used for recycling concrete, which is used as structural fill material at construction sites and in road construction. **Recycled Asphalt Plant at Pier 94 (Port of San Francisco and San Francisco Public Works).** The City and County of San Francisco and Port of San Francisco are in negotiations with DeSilva Gates and ProVen Management to build and operate an asphalt and concrete recycling and production facility on approximately 5 acres of vacant land located at Pier 94. The project would involve the construction of an asphalt batch plant, estimated to produce 250,000 tons of hot mix asphalt per year. **Pier 96 Bulk Export Terminal (Port of San Francisco).** The Port of San Francisco is in negotiations with BMW North America to improve the Pier 96 cargo facility, which would accommodate the import of automobiles from ocean-going vessels, auto processing, and then distribution of the vehicles onto trucks to Northern California and western Nevada. To facilitate operations, the Port of San Francisco and project sponsor would patch and repave the terminal as required, repair and upgrade stormwater infrastructure, and demolish two buildings. In addition, the project would construct a 70,000-square-foot warehouse to support auto processing and the preparation of vehicles prior to distribution. **Bay Rail at Pier 96 Project (Port of San Francisco).** Construct 3,200 feet of track on Pier 96 along the north side of Cargo Way to increase the efficiency of existing freight rail operations.	2018 through 2023
4	Cargo Way Sewer Box Odor Reduction Project (SFPUC)	The project would implement odor control improvements for the sewer box located at Cargo Way, including the identification of flow sources and potential infiltration and inflow issues.	January 2020 through July 2021

Project No. on Map	Project Name (Jurisdiction)	Project Description	Construction Schedule
5	Davidson Wet-Weather Pump Station Improvement Project (SFPUC)	The project would repair and replace the electrical and mechanical equipment inside the pump station.	January 2021 through December 2023
6	Islais Creek Bridge Rehabilitation Project (Public Works)	The project would rehabilitate and repair the Islais Creek Bridge (Bridge No. 34C0024), located along Third Street in the City of San Francisco. The project would include repairing and replacing various components of the bridge to bring it up to current seismic and service standards. The project would extend the bridge's service life an additional 50 years. Construction is estimated to last approximately 18 months, with an assumed start date of mid-2020. Nighttime and weekend construction would be required. Project activities would require partial and full closure of the bridge as well as the Third Street approaches. During construction, the existing light-rail transit tracks and overhead catenary system that provides power to light-rail transit vehicles would be temporarily removed and either stored for reinstallation or replaced in kind.	Mid 2020 to mid-2024
7	Bay Corridor Electrical Power Transmission and Distribution (SFPUC)[d]	This project would install underground duct banks, cables, and vaults for power distribution and communications within street and sidewalk areas. Duct banks would be approximately 2.5 feet wide by 6 feet deep; vaults would be up to 18 feet wide by 28 feet long by 20 feet deep. The main alignment would run along Illinois Street from 16th Street to Cargo Way; it would also run along Cargo Way, Third Street, and Quint Street, by the booster station, and to the southeast plant. Construction in areas south of 23rd Street is expected to start in the spring of 2020, with a duration of 14 months.	2020-2021
8	Southeast Community Facility (SFPUC)	The project would construct a community facility at 1550 Evans Avenue to replace the existing Southeast Community Facility at 1800 Oakdale Avenue. The project would demolish a 32,600-square-foot office building and 19,000-square-foot office/warehouse building and construct three new buildings: a 40,000-gross-square-foot (gsf) community center, a 5,000-gsf, and an 45,000-gsf education building. The site would include 100,000 square feet of open space and an additional 9,000 square feet of enclosed open space for a childcare center.	2020–2023
10	Islais Creek North Combined Sewer Discharge Condition Improvement and Backflow Prevention Project (SFPUC)	This project is a part of the SFPUC Sewer System Improvement Program, which includes multiple projects to assess and make improvements and repairs to the combined sewer discharge system. This project would involve a condition assessment and the addition of backflow preventers in response to sea level rise.	July 2020 through June 2022

Project No. on Map	Project Name (Jurisdiction)	Project Description	Construction Schedule
11	Energy and Travel Center (Port of Oakland)[e]	This project is a part of the 2012 Oakland Army Base Project, which includes multiple projects to redevelop, rehabilitate, and revitalize the Oakland Army Base. This project would involve construction of a fuel and service center, including convenience store, restaurants, restrooms/showers, and scales.	Unknown [g]
12	Berth 9 Wharf Development (Port of Oakland)[f]	This project is a part of the 2012 Oakland Army Base Project, which includes multiple projects to redevelop, rehabilitate, and revitalize the Oakland Army Base. This project would involve improvements to Berth 9.	Unknown [g]

Sources:
Project descriptions without noted sources were prepared by the SFPUC or provided by the San Francisco Planning Department.

a Peninsula Corridor Joint Powers Board, *Peninsula Corridor Electrification Project Final Environmental Impact Report*, State Clearinghouse No. 2013012079, December 2014.

b Caltrain, *Caltrain Modernization, Program Update*, January 2019.

c Port of San Francisco, *Pier 90–94 Backlands Planning*, http://sfport.com/pier-90-94-backlands-planning, accessed February 5, 2019.

d San Francisco Planning Department, *Categorical Exemption, Bay Corridor Electrical Power Transmission and Distribution Project*, Case No. 2018-016699ENV, May 13, 2019.

e,f City of Oakland and Port of Oakland, *Public Engagement Plan for the Former Oakland Army Base,* June 2019.

g Personal communication between Diane Heinze, Port of Oakland (Environmental Supervisor), and Yingying Cai, Panorama Environmental, Inc. (Environmental Planner), July 19, 2019.

C. COMPATIBILITY WITH EXISTING ZONING AND PLANS

	Applicable	*Not Applicable*
Discuss any variances, special authorizations, or changes proposed to the planning code or zoning map, if applicable.	☐	☒
Discuss any conflicts with any adopted plans and goals of the city or region, if applicable.	☐	☒
Discuss any approvals and/or permits from city departments, other than the planning department or the department of building inspection, or from regional, state, or federal agencies.	☒	☐

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

The proposed project, located in San Francisco, would replace treated wastewater effluent pipelines and upgrade associated infrastructure within and adjacent to Islais Creek. The proposed improvements would occur within an existing channel and in areas adjacent to Islais Creek that have been zoned Production, Distribution, and Repair or Heavy Industrial. The staging areas have also been zoned Production, Distribution, and Repair or Heavy Industrial. The proposed project would be compatible with the zoning for these areas. The land use at the staging areas would be temporary and would not conflict with the planning code or zoning.

No variances, special authorizations, or changes to the planning code or zoning map are proposed as part of this project; therefore, these issues are not applicable and not discussed further.

C.1. CITY AND COUNTY OF SAN FRANCISCO PLANS AND POLICIES

C.1.1 San Francisco General Plan

The San Francisco General Plan (general plan)[32] provides general policies and objectives to guide land use decisions in the city. Any conflicts between the proposed project and policies that relate to physical environmental issues are discussed in Section E, Evaluation Of Environmental Effects. The compatibility of the proposed project with general plan policies that do not relate to physical environmental issues would be considered by decision-makers as part of their decision to approve or disapprove the proposed project. The project involves replacement and upgrades to existing city infrastructure. The project would be minor in scope, would not introduce incompatible land uses to the area, and would not otherwise conflict with any general plan policies or objectives. Thus, the project would not conflict with the general plan or any other adopted policy.

[32] San Francisco Planning Department, *San Francisco General Plan*, June 27, 1996, *http://generalplan.sfplanning.org*.

C.1.2 Bayview Hunters Point Area Plan

The Bayview Hunters Point Area Plan[33] is a city plan for the Bayview Hunters Point area of San Francisco, where the proposed project would be located. The plan includes objectives and policies pertaining to land use, transportation, housing, commerce, industry, urban design, recreation and open space, community facilities and services, public safety, and energy. The plan assigns the Light Industrial and Parks and Open Space land use designations to areas where proposed project components would be located within the Bayview Hunters Point area. The staging areas are designated Light Industrial, Parks and Open Space, and Maritime Industrial. The areas within the Maritime Industrial land use are identified as "Port" land in the plan.

The plan does not contain any objectives or policies that apply directly to the proposed project; therefore, the proposed project would not conflict with any Bayview Hunters Point Area Plan objectives or policies.

C.1.3 Proposition M – The Accountable Planning Initiative

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

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

Prior to issuing a permit for any project that requires an initial study under CEQA, or issuing a permit for any demolition, conversion, or change of use, and prior to taking any action that requires a finding of consistency with the general plan, the city is required to find that the proposed project would be consistent with the priority policies. Of the eight priority policies, Policies 6 and 8 would apply to the proposed

[33] San Francisco Planning Department, *Bayview Hunters Point Area Plan*, amended June 3, 2010, *http://generalplan.sfplanning.org/Bayview_Hunters_Point.htm*.

project. Policies 1, 2, 3, 4, 5, and 7 would not be applicable because the proposed project, which consists of installing underground infrastructure, would:

- Have no effect on neighborhood-serving retail uses or neighborhood character
- Have no effect related to affordable housing
- Have no long-term effect on the use of commuter automobiles
- Have no effect on landmark or historic building
- Not include commercial office development, nor would it affect resident employment or business ownership or historic landmarks or buildings

The proposed project would not conflict with the remaining priority policies, Policy 6 and Policy 8, because the proposed project would construct facilities that would meet current seismic standards and the proposed construction within Islais Creek Park and Tulare Park would be temporary; both parks would be restored to their original condition for recreational use after completion of the proposed project. The proposed project would result in minor permanent impacts on Islais Creek Park with the introduction of a sheet-pile wall and an improved, permanent pedestrian walkway along the shoreline between the booster station and the Islais Creek Park floating dock. The sheet pile wall and walkway would be installed at-grade. A detailed analysis of the potential project effects on Islais Creek Park is provided in Section E.12, Recreation, of this initial study. The proposed project would not conflict with these policies.

C.1.4 San Francisco Bicycle Plan

In August 2009, the board of supervisors approved the San Francisco Bicycle Plan[34] (bicycle plan), which includes a citywide bicycle transportation plan (comprising a policy framework and a network improvement document). The bicycle plan contains objectives and identifies policy changes to enhance bicycle access and safety with respect to San Francisco's "bike-ability." It also describes the existing bicycle route network (a series of interconnected streets in which bicycling is encouraged) and identifies gaps within the citywide bicycle route network that require improvement. The final environmental impact report for the 2009 bicycle plan assessed 56 short-term and long-term bicycle improvement projects. The bicycle plan identifies existing bicycle routes on Illinois, Indiana and Third streets and calls for near-term and long-term improvements on Illinois and Indiana streets and minor improvements on Third Street in the vicinity of the proposed project. Temporary impacts related to bicycle access and circulation during project construction are analyzed in Section E.6, Transportation and Circulation, of this initial study. Operation of the proposed project would not alter existing or future bicycle lanes. Therefore, the proposed project would not conflict with the bicycle plan.

[34] San Francisco Municipal Transportation Agency, *San Francisco Bicycle Plan*, June 26, 2009, *https://www.sfmta.com/sites/default/files/projects/San_Francisco_Bicycle_Plan_June_26_2009_002.pdf*.

C.1.5 Better Streets Plan

The Better Streets Plan,[35] adopted in 2010, presents a unified set of standards, guidelines, and implementation strategies to govern how the city designs, builds, and maintains its pedestrian and streetscape facilities. The Better Streets Plan contains goals, policies, and design guidelines to improve pedestrian safety and accessibility, create a unified streetscape design, integrate pedestrians with transit, and improve street ecology and greening. Goals and policies applicable to the project include Goal 9: "San Francisco's streets would be designed for ease of use and access to destinations for all populations, particularly those with visual or mobility impairments," and Policy 9.3: "Maintain accessibility around construction zones per city standards." Access around the proposed project construction zone would be maintained through alternative pedestrian access routes and detours with signage. A detailed analysis of the potential project effects of construction-period street and sidewalk closures on pedestrians is analyzed in Section E.6, Transportation and Circulation, of this initial study. The proposed project would not conflict with the Better Streets Plan.

C.2. SFPUC PLANS AND POLICIES

The SFPUC's 2011 Strategic Sustainability Plan[36] provides a framework for planning, managing, and evaluating SFPUC-wide performance, taking into account the long-term economic, environmental, and social impacts of the SFPUC's business activities. This plan consists of a "durable" section, which contains goals, objectives, and performance indicators for use in implementing the SFPUC's vision and values. The goals and objectives are then used to drive the plan's "dynamic" section, which contains specific actions, targets, measures, and budgeting. The SFPUC uses this document to evaluate its performance semiannually, provide an annual score card, and help the SFPUC measure progress on an annual basis.

The Strategic Sustainability Plan contains objectives to "optimize planning to meet water, wastewater, and power demand" and "improve capital facilities through construction," with actions to "complete planning for the Sewer System Improvement Program," "prioritize sewer replacement," "begin the increase of sewer replacement," and "address climate change concerns, including adaptation and greenhouse gas mitigation." Sewer System Improvement Program goals, levels of service, and program and phase 1 strategies are consistent with the Strategic Sustainability Plan. The proposed project would upgrade the treated effluent pipeline and associated infrastructure within and adjacent to Islais Creek, which would improve operating reliability and efficiency of the Southeast Bay Outfall system. As a result, the project would not conflict with any plan provisions.

35 City and County of San Francisco, *San Francisco Better Streets Plan*, adopted December 7, 2010, *http://www.sf-planning.org/ftp/BetterStreets/proposals.htm#Final_Plan*.

36 San Francisco Public Utilities Commission, *Strategic Sustainability Plan*, March 2011, *http://sfwater.org/modules/showdocument.aspx?documentid=987*.

C.3. OTHER PLANS

C.3.1 Waterfront Land Use Plan

Portions of the proposed project's work areas and staging areas would be within Port of San Francisco–owned properties. The Waterfront Land Use Plan,[37] which was initially adopted by the Port Commission in 1997, defines acceptable uses and policies and provides land use information applicable to properties under the Port Commission's jurisdiction. Portions of the proposed project's work areas would be within areas designated as "other public access and open space areas" and "other maritime areas." In its "General Policies for Areas South of China Basin Channel," the plan allows interim uses generally for periods of one to 10 years and requires compliance with environmental regulations (e.g., noise, air quality, transportation congestion). The activities proposed within the staging areas (i.e., office trailers, equipment and materials storage, parking for construction workers' vehicles, etc.) would be temporary and would comply with environmental regulations, as discussed in Section E, Evaluation Of Environmental Effects, of this initial study; therefore, temporary staging and material handling would not conflict with Waterfront Land Use Plan policies. The portion of the proposed project that would be within a Port of San Francisco–owned property would not conflict with the Waterfront Land Use Plan.

C.3.2 San Francisco Bay Area Seaport Plan

The San Francisco Bay Area Seaport Plan[38] (seaport plan) is the product of a cooperative planning effort of the Metropolitan Transportation Commission and the San Francisco Bay Conservation and Development Commission (BCDC). The seaport plan, which constitutes the maritime element of the Metropolitan Transportation Commission's Regional Transportation Plan, is incorporated into the BCDC's San Francisco Bay Plan (further discussed below) and the basis for that plan's port policies. The Metropolitan Transportation Commission uses the seaport plan to assist in project funding decisions and managing the metropolitan transportation system; the BCDC uses the seaport plan to guide its regulatory decisions regarding permit applications, consistency determinations, and related matters.

The seaport plan designates Pier 80 and a portion of the proposed Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas as a "port priority use area." Furthermore, a seaport plan policy regarding port priority use areas states that:

> Interim uses should be of a nature that allow [sic] the site to be converted to port use when it is needed for marine terminal development or other port priority use. The length of the interim use period should be determined on a case-by-case basis for each site and proposed use. Factors to be considered in determining the length of the interim use should include, but not be limited to, (1) the amortization period of investments associated with the proposed use, (2) the lead time necessary to convert the site to the designated marine terminal or port use, and (3) the need for

[37] Port of San Francisco, *Waterfront Land Use Plan 1997*, revised version, October 2009, *http://www.sfport.com/index.aspx?page=199*.

[38] San Francisco Bay Conservation and Development Commission/Metropolitan Transportation Commission, *San Francisco Bay Area Seaport Plan*, April 18, 1996, as amended through January 2012, *http://www.bcdc.ca.gov/seaport/seaport.pdf*.

the site, as measured by the Bay Area volume of the cargo type specified to be handled at that site and the available capacity at other ports in the Bay Area to accept the specified cargo.

An additional policy states that "no bay fill should be authorized for interim uses that are not water oriented." The construction work at the Pier 80 outfall structure and the proposed temporary use of the Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas would not require the placement of fill in the bay and would only be used with permission for interim use from the port. The interim use would allow the site to be converted to a port use when needed. The proposed project would not conflict with the seaport plan.

C.3.3 San Francisco Bay Plan

The BCDC's San Francisco Bay Plan[39] generally applies to San Francisco Bay and a 100-foot-wide band of shoreline along the bay. The San Francisco Bay Plan contains policies that address a variety of topics relevant to the proposed project. Although the project site would be within the BCDC's 100-foot-wide shoreline band and within BCDC's Bay jurisdiction, project components installed along Islais Creek and at the Pier 80 outfall structure would be primarily underground, with the exception of the sheet pile walls and improved pedestrian walkway which would be installed at-grade, and would not obviously conflict with any bay plan policies. Portions of the proposed staging areas would extend into the BCDC's 100-foot-wide shoreline band; however, uses in these areas would be temporary and coordinated with the Port of San Francisco. The bay plan designates portions of the Pier 94 Backlands, Pier 94/96, and Pier 96 for "port priority" use and contains a policy stating that, on land reserved for port use, "other uses may be allowed in the interim that, by their cost and duration, would not preempt future use of the site for water-related industry or port use." The proposed interim uses of the Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas staging would be consistent with the plan and would not preempt future use of the site for water-related industry or port use as discussed above. Any conflicts between the proposed project and policies that relate to physical environmental issues are discussed in Section E, Evaluation Of Environmental Effects. The compatibility of the proposed project with San Francisco Bay Plan policies that do not relate to physical environmental issues would be considered by decision-makers as part of their decision to approve or disapprove the administrative permit for proposed project work within BCDC jurisdiction. SFPUC would comply with all terms of the permit; therefore, the proposed project would not conflict with the San Francisco Bay Plan.

C.3.4 San Francisco Waterfront Special Area Plan

The BCDC's San Francisco Waterfront Special Area Plan[40] (April 1975, as amended through April 2012) applies the requirements of the McAteer-Petris Act and the provisions of the San Francisco Bay Plan to the San Francisco waterfront in greater detail. This special area plan designates Pier 80 and a portion of the proposed Pier 94 Backlands, Pier 94/96, and Pier 96 construction staging areas as a "port priority area." In this area, the special area plan permits maritime and public access uses on new or replacement fill, stating

39 San Francisco Bay Conservation and Development Commission, *San Francisco Bay Plan*, 1969 (with periodic amendments), *http://www.bcdc.ca.gov/plans/sfbay_plan.html*.

40 San Francisco Bay Conservation and Development Commission, *San Francisco Waterfront Special Area Plan*, April 1975, as amended through April 2012, *http://www.bcdc.ca.gov/sfwsap/SFWSAP_Final_2012.pdf*.

that "development permitted in this area should be consistent with the provisions of the seaport plan." The construction activities at the Pier 80 outfall structure and the proposed temporary use of the Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas would not conflict with the seaport plan because the project does not require any new permanent or replacement fill at these locations, and no development would occur as a result of the temporary project staging and material handling.

The special area plan also designates areas along the boundaries of Islais Creek as public recreation areas. Project components installed along Islais Creek would be primarily underground and therefore would not interfere with the area's use for public recreation. A detailed analysis of the potential project effects on Islais Creek Park is provided in Section E.12, Recreation, of this initial study. For these reasons, the proposed project would not conflict with the San Francisco Waterfront Special Area Plan.

C.4. Regional Plans and Policies

C.4.1 Clean Air Plan

The Bay Area Air Quality Management District's 2017 Clean Air Plan[41] demonstrates how the San Francisco Bay Area will reduce emissions and concentrations of harmful air pollutants, reduce greenhouse gas emissions, achieve compliance with state ozone standards, and reduce the transport of ozone and ozone precursors to neighboring air basins.

The proposed project would include appropriate measures that would reduce pollutant emissions generated by construction of the proposed project. Therefore, the proposed project would not disrupt or hinder implementation of control measures identified in the 2017 Clean Air Plan or otherwise conflict with the 2017 Clean Air Plan. Pollutant emissions generated by construction and operation of the proposed project are analyzed in Section E.8, Air Quality and Section E.9, Greenhouse Gas Emissions, of this initial study.

C.4.2 Water Quality Control Plan for the San Francisco Bay Basin

The San Francisco Regional Water Quality Control Board's Water Quality Control Plan for the San Francisco Bay Basin[42] (basin plan) guides water quality control planning in the San Francisco Bay Basin. The basin plan designates beneficial uses and water quality objectives for waters of the state, including surface waters and groundwater. It also includes implementation programs to achieve water quality objectives. As described in Section E.17, Hydrology and Water Quality, of this initial study, the proposed project would not result in substantial water quality effects; thus, the proposed project would not conflict with the basin plan.

41 Bay Area Air Quality Management District, *Clean Air Plan*, adopted April 19, 2017, *http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans*.

42 Regional Water Quality Control Board, *Water Quality Control Plan for the San Francisco Bay Basin,* approved March 20, 2015, *http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml*.

C.5. APPROVALS AND PERMITS

See Section A.8, Regulatory Actions and Approvals, for a list of anticipated approvals from federal, state, and local agencies.

D. SUMMARY OF ENVIRONMENTAL EFFECTS AND APPROACH TO ANALYSIS

D.1. SUMMARY OF ENVIRONMENTAL EFFECTS

The proposed project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion for each environmental factor. Project impacts would not be significant for the remaining issue areas.

☐ Land Use and Planning	☐ Greenhouse Gas Emissions	☒ Geology and Soils
☐ Aesthetics	☐ Wind	☐ Hydrology and Water Quality
☐ Population and Housing	☐ Shadow	☐ Hazards and Hazardous Materials
☐ Cultural Resources	☐ Recreation	☐ Mineral Resources
☐ Tribal Cultural Resources	☐ Utilities and Service Systems	☐ Energy
☐ Transportation and Circulation	☐ Public Services	☐ Agriculture and Forest Resources
☐ Noise	☒ Biological Resources	☐ Wildfire
☐ Air Quality		☒ Mandatory Findings of Significance

D.2. APPROACH TO ANALYSIS

The initial study checklists presented in this section correlate with CEQA significance criteria used to evaluate the project impacts for each environmental topic. The impact evaluation considers project impacts both individually and cumulatively. For the significance criteria checked "less than significant with mitigation incorporated," "less-than-significant impact," "no impact," or "not applicable," the impact analysis determined that the project would not have a significant adverse impact with respect to those environmental issues. A full discussion is presented for criteria checked "less than significant with mitigation incorporated" and "less-than-significant impact," and a brief discussion is included for criteria checked "no impact" or "not applicable." The impacts corresponding to the topics checked above would be less than significant with mitigation incorporated. The impact analyses are presented in Sections E.1, Land Use and Planning through E.23, Mandatory Findings of Significance, below.

Impacts are numbered throughout this initial study using an environmental topic identifier (e.g., "CR" for cultural resources) followed by sequentially numbered impacts. Mitigation measures are numbered to correspond to the associated impacts (e.g., Mitigation Measure M-CR-1 addresses Impact CR-1). Cumulative impacts are discussed at the end of the impact analysis for each environmental topic and identified by the letter "C" (e.g., Impact C-CR addresses cumulative impacts on cultural resources).

E. EVALUATION OF ENVIRONMENTAL EFFECTS

E.1. LAND USE AND PLANNING

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
1. LAND USE AND LAND USE 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?	☐	☐	☐	☒	☐

Impact LU-1: The proposed project would not physically divide an established community. (No Impact)

Physical division of an established community would typically involve construction of a physical barrier to neighborhood access, such as a new freeway, or removal of a means of access, such as a bridge or a roadway, which would not occur under the proposed project. The proposed project would replace and upgrade effluent pipelines for treated wastewater and associated infrastructure within and adjacent to Islais Creek. The majority of the proposed project would be underground, within the bed and bank of Islais Creek, and would not divide an established community. The new, permanent aboveground project components, such as bank stabilization structures (sheet-pile walls) and the manhole for access to the tapping tee in Tulare Park during operation and maintenance, would not block access between adjacent land uses or physically divide an established community. The use of staging areas during construction would not physically divide established communities because these areas do not act as corridors between or within existing neighborhoods. Therefore, the proposed project would not physically divide an established community, and there would be no impact.

Impact LU-2: The proposed project would not 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)

Conflicts with land use plans, policies, and regulations do not necessarily indicate a significant environmental land use impact under CEQA, unless a project substantially conflicts with a land use plan or policy that was adopted for the purpose of avoiding or mitigating an environmental effect such that a substantial adverse physical change in the environment related to land use would result. To the extent that physical environmental impacts may result from such conflicts, the physical impacts are evaluated under the relevant environmental topic sections of this initial study.

Applicable local land use policies include the general plan, which describes the comprehensive long-term land use policies for the city. The general plan consists of the following 10 elements that set forth goals, policies, and objectives for the physical development of San Francisco: housing, commerce and industry, recreation and open space, transportation, urban design, environmental protection, community facilities,

community safety, arts, and air quality. There are two relevant objectives, as well as two associated policies from the general plan elements above, that apply to the proposed project, described as follows:

> Environmental protection element objective 3: "Maintain and improve the quality of the bay, ocean, and shoreline areas;" Policy 3.1: "Cooperate with and otherwise support regulatory programs of existing regional, state, and federal agencies dealing with the bay, ocean, and shorelines;" and Policy 3.3: "Implement plans to improve sewage treatment and halt pollution of the bay and ocean."

The proposed project would improve the reliability of the Southeast Bay Outfall system and reduce unauthorized treated effluent discharges into Islais Creek resulting from pipeline failure, thereby reducing pollution in the bay and ocean. The proposed project is consistent with Objective 3 and Policy 3.3 of the environmental protection element.

> Air quality element objective 5: "Minimize particulate matter emissions from road and construction sites;" Policy 5.1: "Continue policies to minimize particulate matter emissions during road and building construction and demolition."

The proposed project does not involve any road or building construction or demolition. The objective and policy are relevant to the proposed project because the use of construction equipment during project implementation would, if not properly managed, create dust and result in emissions of criteria air pollutants. The SFPUC would require the construction contractor to implement site-specific best management practices to control dust and emissions of criteria air pollutants in accordance with the Construction Dust Control Ordinance. The proposed project would be located within an Air Pollutant Exposure Zone,[43] which is an area with high background concentrations of air pollutants. As such, the SFPUC would comply with the Clean Construction Ordinance, which requires public projects to reduce emissions at construction sites in areas that have been classified as Air Pollutant Exposure Zones. Compliance with the Clean Construction Ordinance is analyzed in detail in Section E.8, Air Quality, of this initial study. The proposed project would be consistent with the air quality element objective and policy for minimizing particulate matter emissions due to compliance with the San Francisco Dust Control Ordinance and Clean Construction Ordinance. The proposed project would not conflict with the environmental protection and air quality elements of the general plan nor would it substantially conflict with any applicable general plan goals, policies, and objectives.

Other applicable plans and regulations include the San Francisco Bay Area Seaport Plan, San Francisco Bay Plan, San Francisco Waterfront Special Area Plan, Basin Plan, Clean Air Plan, SFPUC Strategic Sustainability Plan, and Accountable Planning Initiative.[44] Compatibility with these plans is addressed in Section C, Compatibility with Existing Zoning and Plans, of this initial study.

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[43] San Francisco Planning Department, Property Information Map, Air Pollutant Exposure Zone (2020), Available: https://sfplanninggis.org/pim, accessed on May 15, 2020.

[44] Other regional plans, such as the *2017 Clean Air Plan* and the basin plan concerning San Francisco Bay, address specific environmental resources and therefore are discussed in the relevant resource sections of this initial study.

The proposed project would involve upgrades to city infrastructure for treated wastewater. The upgrades would be designed to improve water quality and comply with water quality regulations. The proposed project would comply with all applicable environmental regulations. The proposed project would not conflict with any applicable land use plans policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, there would be no impact.

Impact C-LU: The proposed project, in combination with cumulative projects, would not physically divide an established community, nor would it conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. (No Impact)

Because the proposed project would have no land use impacts, it would not contribute to any potential cumulative land use impacts (no impact).

E.2. AESTHETICS

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
2. AESTHETICS—Except as provided in Public Resources Code section 21099, 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 other features of the built or natural environment that contribute to a scenic public setting?	☐	☐	☒	☐	☐
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 point). 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 that would adversely affect daytime- or nighttime views in the area?	☐	☐	☒	☐	☐

The proposed project is located within an urbanized area; therefore, the analysis of Topic E.2(c) focuses on whether the project would conflict with applicable zoning and other regulations governing scenic quality.

The project site and staging areas are in developed and generally flat, low-lying areas of the city. As described in Section A, Project Description, the areas surrounding the proposed project are urban and developed, containing primarily industrial land uses. The existing visual quality of the project site and surrounding area is considered low because of its industrial urban setting. Figure 7, p. 57, and Figure 9, p. 58, show the existing condition of Islais Creek. Views of the project site and staging areas are typically very short-range views, primarily from adjacent streets and parcels. This is because of intervening structures between the project site and observer at longer distances.

A project would have a significant effect on scenic vistas if it would substantially degrade important public view corridors or obstruct scenic views from public areas that are seen by a substantial number of people. A scenic vista is generally an expansive, publicly accessible view that is recognized and valued for its scenic quality. Scenic vistas are typically available from vista points, designated scenic highways, or parks. The urban design element of the general plan includes objectives and policies to protect major views in the city, with particular attention paid to views of open space and water.[45] For this analysis, views of San Francisco Bay and Islais Creek (including views from a public promenade on the northern bank of Islais Creek, the San Francisco Bay Trail, and Heron's Head Park) are considered scenic vistas. The bay trail is a public

[45] San Francisco Planning Department, *San Francisco General Plan Urban Design Element*, as amended through 2010, *http://generalplan.sfplanning.org/I5_Urban_Design.htm*.

multipurpose recreational path that crosses Islais Creek via the Illinois Street Bridge, then continues south along Cargo Way, after which it traverses east–west through Heron's Head Park.[46]

Scenic resources include trees, rock outcroppings, and other landscape features that contribute to the scenic character of a public area. The urban design element of the general plan[47] contains objectives and policies to protect natural resources such as sand dunes; hills; cliffs; open spaces, including recreational resources; San Francisco Bay; and the Pacific Ocean, all of which contribute to the visual framework of the city. There are no scenic resources in the vicinity of the project work area at Islais Creek. Several scenic resources are located near the proposed Pier 80, Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas, including the Pier 94 Wetlands, Heron's Head Park, and San Francisco Bay. The Pier 94 Wetlands, located north of Pier 94, is a small salt marsh that provides wildlife habitat and wildlife viewing opportunities. The wetlands contribute to the scenic character of San Francisco Bay, which is adjacent to the east and north of the wetlands. Heron's Head Park, southeast of the Pier 94 Backlands and south of Pier 96, is a 22-acre open space with wildlife habitat and wetlands. The park provides wildlife viewing opportunities and contributes to the visual character of the bay within a primarily industrial setting. There are no other scenic resources in the vicinity of the Islais Creek project work area or proposed staging areas.

I-280, an eligible but not officially designated State Scenic Highway, provides scenic views of Islais Creek and San Francisco Bay to the east of the highway.

Impacts AE-1 and AE-2: The proposed project would not have a substantial adverse effect on a scenic vista or substantially damage scenic resources (Less than Significant)

Construction

Construction activities, equipment and materials, and vehicles would be visible from various scenic viewpoints, including the public promenade on the north bank of Islais Creek (just south of Indiana Street), Islais Creek Park,[48] Tulare Park,[49] Heron's Head Park, Pier 94 Wetlands, and the bay trail. Views of construction equipment and materials during the construction period would appear similar to the existing elements in the viewshed, which include ships and equipment used at shipyards along Islais Creek and material stockpiles along Islais Creek and within proposed staging areas. Construction would not degrade any views in the project area because construction activities would be temporary, and the equipment and activity would have a low level of contrast with existing elements in the viewshed. Views of the project site from some scenic viewpoints, such as the bay trail, are limited due to the presence of intervening structures and vegetation. Scenic views of the San Francisco Bay looking east and south from Heron's Head Park and north from the Pier 94 Wetlands would remain unaffected by construction of the proposed project because no project construction activities would occur within the scenic viewing area. As a result, construction of the proposed project would not substantially alter scenic vistas in the area.

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46 Association of Bay Area Governments, *San Francisco Bay Trail – Navigational Map*, *http://baytrail.org/baytrailmap.html*, accessed March 14, 2019.

47 San Francisco Planning Department, *San Francisco General Plan Urban Design Element*, 2010, *http://www.sf-planning.org/ftp/General_Plan/I5_Urban_Design.htm*, accessed October 30, 2018.

48 The park would be used as a staging area and the public would not have access to the area during construction. Access to Islais Creek would be provided via a footpath on the western edge of the park, outside of the staging area boundary.

49 The park would be used as a staging area; the public would not have access to the area during construction.

The proposed project and proposed staging areas are located east of I-280. Existing views of the bay from I-280 in the proposed project area are distant and largely obstructed by industrial uses such as warehouses, buildings, and port infrastructure (cranes, barges, etc.). During construction, aboveground construction activities would be visible as potential viewers on I-280 pass the work areas; however, views would not be visually distinct or highly noticeable in an area dominated by industrial land uses and wastewater management facilities. Construction of the proposed project would not be distinct or highly visible within its surroundings nor would it adversely alter views from I-280 of the Bay.

The proposed project would not involve construction activities within the Pier 94 Wetlands, Heron's Head Park, or San Francisco Bay. At the Pier 80, Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas, construction equipment, vehicles, and stockpiles would be limited to the fenced area or adjacent roadways. The proposed project would not damage scenic resources and there would be no impact.

Potential impacts on scenic vistas and resources would be further minimized with implementation of SFPUC Standard Construction Measure 8 (Visual and Aesthetic Considerations), which requires construction sites to be maintained in a clean and orderly state and returned to their general pre-project condition after construction. As a result, construction of the proposed project would not have a substantial adverse effect on a scenic vista or substantially damage scenic resources. Impacts on these resources would be less than significant.

Operation

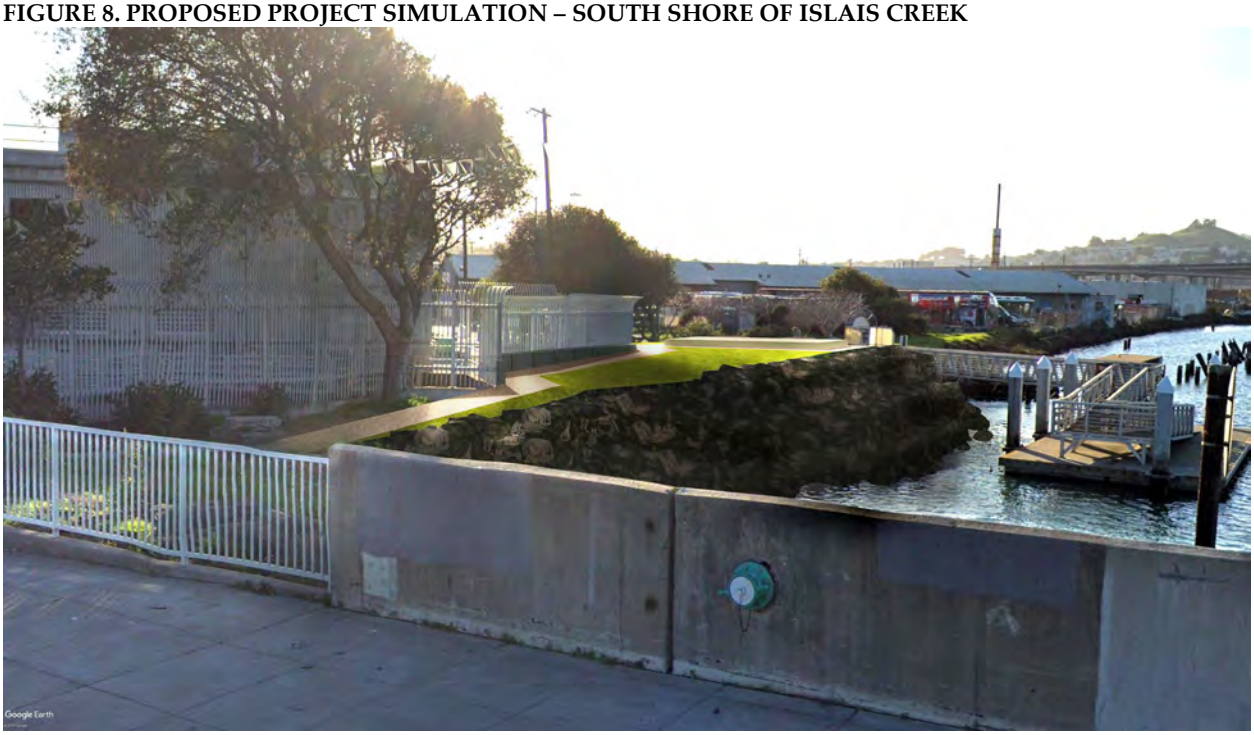
The majority of project components, such as the replaced pipelines, new conduits, and tapping tee, would be below grade or flush with the ground surface and would not affect scenic vistas or scenic resources during project operation because the components would not be visible. Visible components of the completed project would include bank stabilization features, such as riprap along the northern and southern banks of Islais Creek, the replaced fencing along the project perimeter, and new vault structure adjacent to Third Street, extending approximately 1 foot above the ground. Figure 7 and Figure 8 provide an existing view of the southern bank of Islais Creek from the Islais Creek Bridge (looking west) and a visual simulation of the constructed project components on the southern bank, respectively. Figure 9, p. 58, and Figure 10, p. 58, provide an existing view of the northern bank of Islais Creek from the Islais Creek Bridge (looking northwest) and a visual simulation of the constructed project components on the northern bank, respectively. The visible proposed project elements would be similar in appearance to existing visual elements in the vicinity of Islais Creek and the booster station, including the existing riprap, sheet piling, piping facilities, and fencing. The impact on a scenic vista and scenic resources would be less than significant due to the limited change in visual quality that would result from the proposed project elements.

During operation of the proposed project, any changes to views of the project area from I-280 would not be noticeable to motorists, given the negligible visual change to visible features as well as the distance and brevity of the views of the passing motorists.

FIGURE 7. EXISTING VIEW – SOUTH SHORE OF ISLAIS CREEK

SOURCE: SFPUC, photograph taken in 2018 for the Southeast Bay Outfall Islais Creek Crossing Replacement Project.

FIGURE 8. PROPOSED PROJECT SIMULATION – SOUTH SHORE OF ISLAIS CREEK

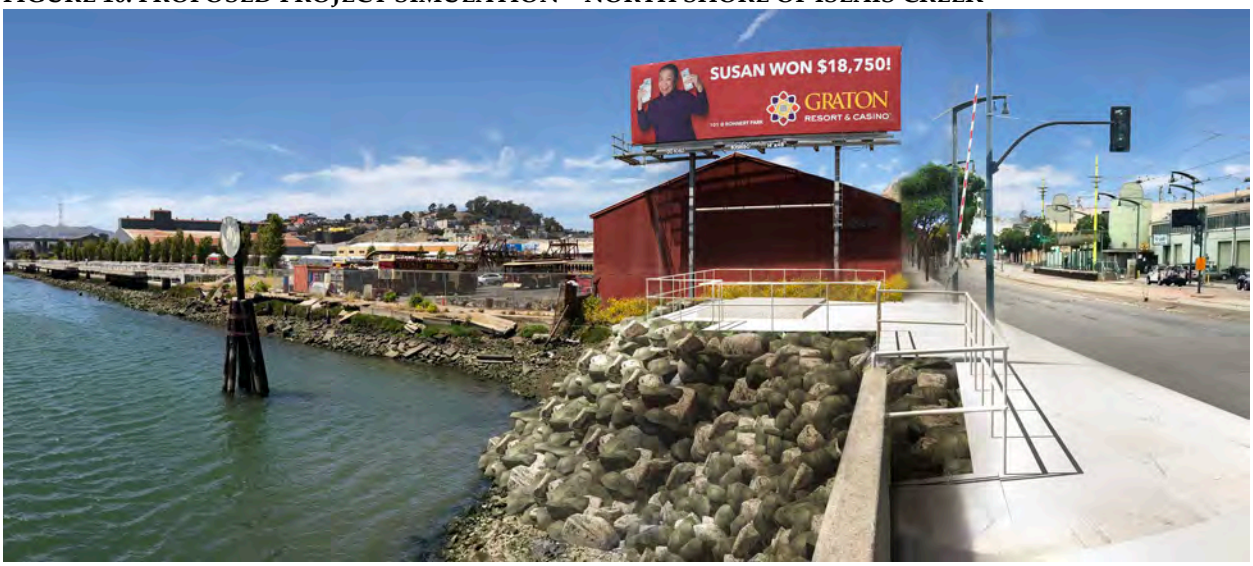


SOURCE: SFPUC, simulation created in 2019 for the Southeast Bay Outfall Islais Creek Crossing Replacement Project.

FIGURE 9. EXISTING VIEW – NORTH SHORE OF ISLAIS CREEK

SOURCE: SFPUC, photograph taken in 2018 for the Southeast Bay Outfall Islais Creek Crossing Replacement Project.

FIGURE 10. PROPOSED PROJECT SIMULATION – NORTH SHORE OF ISLAIS CREEK[50]



SOURCE: SFPUC, simulation created in 2019. for the Southeast Bay Outfall Islais Creek Crossing Replacement Project.

[50] The vault would be approximately two feet above grade.

After the proposed project is constructed and operational, proposed staging areas in the vicinity of the Pier 94 Wetlands, San Francisco Bay, San Francisco Bay Trail, and Heron's Head Park would be returned to pre-project conditions and/or their existing industrial uses. Temporary staging activities would not affect a scenic vista or scenic resources during project operation.

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

The urban design element of the general plan includes objectives and policies to protect major views in the city and natural resources that contribute to the visual framework of the city. The proposed project would not conflict with these policies because the project would not degrade or obstruct any scenic views or vistas observed from a public area or damage scenic resources within the project site or proposed staging areas. Construction of the proposed project could be visible from publicly accessible viewpoints; however, construction activities would be temporary and would not substantially or permanently alter the existing scenic quality of the area. The proposed project would not involve construction of any buildings or structures subject to the San Francisco Arts Commission Civic Design Review process and Public Arts Program. As a result, the proposed project would not conflict with applicable zoning and other regulations governing scenic quality. Impacts would be less than significant.

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

Construction

Nighttime construction would be required for approximately nine months to meet the proposed project's in-service date due to limitations on the timing of work within Islais Creek; it may also be scheduled to reduce traffic conflicts. Exterior lighting would be required for nighttime construction as well as overnight security during non-construction hours. During nighttime work, exterior lighting to accommodate the work at the project site would be temporary and short-term in nature. Nighttime lighting would be confined to the project footprint and directed to the active construction area. Nighttime lighting would not affect nighttime views in the area. There are no residences in the immediate vicinity of the construction work areas. The nearest residences are on Cesar Chavez Street, more than 1,000 feet away from the project site and to the northwest. The closest residence to the proposed staging areas is located on Cesar Chavez Street, approximately 820 feet northwest of the proposed Tennessee Street staging area. Project lighting would not be visible from any residences during construction because of the distance between the project site and the nearest residential structures, existing sources of light in the area, and intervening buildings. Construction of the proposed project would not result in a substantial source of light that could adversely affect nighttime views in the area. As a result, the impact from construction lighting would be less than significant.

Project construction would not include any equipment or materials with highly reflective surfaces and the proposed project would not introduce a source of glare during construction; therefore, no construction impacts related to glare would occur.

Operation

No exterior lighting is proposed for operation of the project; therefore, no lighting impact would occur during operation.

Windows and building surfaces with highly reflective surfaces can be a source of daytime glare. Daytime glare can create hazards for motorists and nuisances for pedestrians and other viewers. The color of the replacement fencing would be the same as or similar to the existing fence on the Islais Creek Bridge, and the vault hatch would be dull and non-reflective. The proposed project components would not include any highly reflective surfaces. The project would not introduce a source of glare; therefore, glare-related impacts would not occur (no impact).

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

The geographic scope for potential cumulative aesthetic impacts includes cumulative projects within the publicly accessible viewshed of the proposed project, which extends approximately 2,000 feet in every direction from the project site and proposed staging areas. This extent encompasses all of the projects listed in Table 3, p. 38, and shown in Figure 6, p. 37. The visual setting of the project site is defined by topography and the density of development in the area. Because of the density of development in the vicinity and the proposed project's location in a topographically low area, most views of the project site are relatively short range.

Scenic Vistas and Scenic Resources

As discussed in Impact AE-1, the project construction and operation would have a less-than-significant impact on scenic vistas and scenic resources. The cumulative projects would involve construction equipment and activity that could have an adverse effect on scenic views in the proposed project area. Given the existing heavy industrial setting of the area, construction activities associated with the cumulative projects would have a low level of contrast with the existing development in the area and would be temporary. As a result, construction of the proposed project, in combination with the cumulative projects, would have a less-than-significant cumulative impact on scenic vistas and scenic resources.

During operation, long-term visual impacts could occur if the proposed project, in combination with the cumulative projects, would result in a substantial adverse effect on a scenic vista or conflict with applicable zoning and other regulations governing scenic quality. As applicable, the cumulative projects would be designed to conform to the applicable land use designations, urban design requirements, and height and bulk district outlined in the San Francisco Planning Code. Similar to the proposed project, most of the cumulative projects consist of repair, rehabilitation, replacement, upgrade, and/or modernization of existing infrastructure and facilities. These projects are located within areas zoned for industrial and maritime uses and would be consistent with the surrounding land uses. Operation of the proposed project, in combination with the identified cumulative projects, would have a less-than-significant cumulative impact on scenic vistas and scenic resources and would not conflict with regulations governing scenic quality.

Lighting and Glare

Cumulative impacts would occur if the proposed project, in combination with cumulative projects, were to result in substantial sources of light and glare. As discussed under Impact AE-3, exterior lighting would be required to accommodate nighttime construction (when required) and for overnight security purposes during the construction phase. The lighting would not be visible from any residences during construction because of the distance between the project site and the nearest residential structures, existing sources of light in the area, and intervening buildings. Project construction would have no impact related to glare. The cumulative projects in the vicinity would similarly be distanced from residential structures and obscured by intervening buildings; therefore, the proposed project construction combined with the cumulative projects would not result in a significant cumulative impact related to lighting or glare. During operation, the proposed project would not require permanent exterior lighting, nor would it result in a source of glare. Therefore, operation of the proposed project would not contribute to any potential cumulative impacts related to light and glare (no impact).

E.3. POPULATION AND HOUSING

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
3. 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 units or create demand for additional housing, necessitating the construction of replacement housing?	☐	☐	☐	☒	☐

Impact PH-1: The proposed project would not 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)

In general, a project would be considered growth-inducing if its implementation were to result in substantial population increases and/or new development that might not occur if the project were not implemented. The proposed project would replace and upgrade effluent pipelines for treated wastewater as well as infrastructure associated with the SFPUC's existing Southeast Bay Outfall system. The proposed project would not involve the development of new housing, which could directly induce population growth, nor would it increase the capacity of the wastewater system, which could indirectly induce population growth.

Construction

Construction of the proposed project would require a total of approximately 27 months of active construction distributed across a 3.5-year period. As described in Section A, Project Description, the number of daily workers would range between one and 160 workers per day (depending on the phase of construction) with an average of approximately 27 construction workers per day during active construction periods. According to the California Employment Development Department (EDD), in 2016, approximately 20,600 people worked in construction jobs in San Francisco County and 118,200 people worked in construction jobs in San Francisco County and the four surrounding counties (San Mateo, Marin, Alameda, and Contra Costa).[51] The approximately 27 jobs resulting from construction of the proposed project is substantially fewer than the 7,170 new construction jobs that the Association of Bay Area Governments estimates will come to San Francisco between 2010 and 2020,[52] a projection that is also cited in the San

[51] California EDD, *Industry Employment Data for San Francisco County*, 2017; California EDD, *Industry Employment Data for Alameda County*, 2017; California EDD, *Industry Employment Data for Contra Costa County*, California, 2017; California EDD, *Industry Employment Data for Marin County*, California, 2017; California EDD, *Industry Employment Data for San Mateo County*, California, 2017.

[52] Association of Bay Area Governments, *Projections 2013*, December 2013.

Francisco General Plan Housing Element.[53] Given the size of the regional construction workforce, compared with the number of workers that would be needed for the proposed project, project construction workers would very likely be drawn primarily from the local and regional construction workforce. Project construction workers who do not live in the project vicinity would most likely commute from elsewhere in the city or the Bay Area rather than relocate from more distant cities or towns. Consequently, construction of the proposed project would not induce population growth by attracting a substantial number of construction workers from outside the region to the area. Therefore, project construction would not create a demand for additional housing or other facilities and services associated with growth and impacts would be less than significant.

Operation

Operation of the proposed pipelines and associated infrastructure would be unmanned and would not require a permanent workforce. Maintenance activities would be conducted on an as-needed basis, similar to existing maintenance work, and would not create any new staff positions. Therefore, operation of the proposed project would not induce growth by establishing permanent employment opportunities that could stimulate population growth. The proposed project operations would not induce population growth, either directly or indirectly. No operational impact would occur.

Impact PH-2: The proposed project would not displace substantial numbers of existing people or housing units, nor would it create demand for additional housing, necessitating the construction of replacement housing. (No Impact)

The project site and staging areas do not include existing housing or residential uses. Therefore, the proposed project would not displace existing residences, nor would it result in the displacement of any people or the construction of new housing elsewhere. Because the project would not displace existing people or housing, there would be no impact.

Impact C-PH: The proposed project, in combination with cumulative projects in the vicinity, would not induce substantial unplanned population growth or create demand for additional housing. (Less than Significant)

The geographic scope for potential cumulative population and housing impacts encompasses the Bayview-Hunters Point Community. None of the cumulative projects listed in Table 3, p. 38, involve development of new housing units.

As discussed in Impact PH-2, the proposed project would not displace any existing people or housing or result in the need for replacement housing. Thus, the project would not contribute to any potential cumulative impact associated with displacement of housing (no impact).

As discussed under Impact PH-1, the average number of construction workers on site during active construction of the proposed project would be approximately 27 per day. Although construction employment associated with the proposed project would be temporary, it could coincide with construction employment generated by some of the identified cumulative projects that could be under construction at the same time as

[53] City and County of San Francisco, *San Francisco General Plan, 2014 Housing Element,* adopted April 27, 2015.

the proposed project. Given the size of the regional construction workforce, the construction labor force in San Francisco County and the surrounding counties is expected to accommodate ongoing demand for construction labor, as discussed above. Therefore, construction of the proposed project, in combination with the cumulative projects, would have a less-than-significant cumulative impact on population and housing.

The proposed project would not require any additional workers for operation of the replaced pipelines or associated infrastructure. Therefore, the proposed project would not contribute to any potential cumulative impact on population growth (no impact).

E.4. CULTURAL RESOURCES

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
4.	**CULTURAL RESOURCES—Would the project:**					
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to section 15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code?	☐	☐	☒	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5?	☐	☐	☒	☐	☐
c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐	☐

Impact CR-1: The proposed project would not cause a substantial adverse change in the significance of a historical resource pursuant to section 15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code. (Less than Significant)

Historical resources are those properties that meet the definition for historical resources in CEQA Guidelines section 21084.1 and CEQA Guidelines section 15064.5. "Historical Resources" include properties listed in, or formally determined eligible for listing in, the California Register of Historical Resources (California Register) or listed in an adopted local historic register. The term "local historic register" or "local register of historical resources" refers to a list of resources that are officially designated or recognized as historically significant by a local government pursuant to resolution or ordinance. Historical resources also include resources identified as significant in a historical resource survey meeting certain criteria. Additionally, properties that are not listed, but are otherwise determined to be historically significant based on substantial evidence, would also be considered a historical resource. A property may be considered a historical resource if it meets any of the California Register criteria related to (1) events, (2) persons, (3) architecture, or (4) information potential that make it eligible for listing in the California Register, or if it is considered a contributor to an existing or potential historic district. The significance of a historical resource is materially impaired when a project "demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance."

There are no built structures of historic significance within the *area of potential effect*[54] for the proposed project. The only eligible historical resource located within the project vicinity is the Islais Creek Bridge, which is included in the Caltrans Statewide Historic Bridge Inventory Update (Bridge #34C0024).[55] The bascule bridge[56] was constructed in 1949 and is considered significant under National Register of Historic

[54] For the purposes of this initial study, the "area of potential effect" is defined as areas where ground disturbance, such as excavation, pile driving, and grading, are proposed during construction of the proposed project.

[55] State of California Department of Parks and Recreation, Primary Record for Third Street Bridge over Islais Creek, Primary # P-38-004380, October 21, 1994.

[56] A bascule bridge is a moveable bridge with a counterweight that continuously balances a span, or leaf, throughout its upward swing to provide clearance for boat traffic.

Places and California Register of Historical Resources Criterion 3 as a distinctive example of an Art Moderne style applied to a bridge.[57] The period of significance is 1949, the date the bridge was constructed. Contributing features of the bridge include the ends of the bascule leaves, quarter-circle gear housing, control tower, and sidewalk railings.

Proposed construction activities in the area of the bridge are limited to the removal of pavement from the sidewalk, gutter, and curb on the northwestern side of Third Street as it approaches the bridge. The sidewalk, gutter, and curb would be repaved to match preconstruction conditions upon the completion of the proposed project. Construction activities would occur on Third Street approximately 50 feet north of the bridge deck, outside the boundary of the historic resource, and would not affect contributing features of the historic resource.

The proposed project would include pile driving in the vicinity of the bridge. As discussed in Section E.7, Noise, vibration damage to the bridge could result from pile driving if pile driving would occur within 53 feet of the bridge. Pile-driving activities for the proposed project would primarily occur approximately 55 to 125 feet away from the bridge deck, providing adequate distance to ensure groundborne vibrations would remain below damage thresholds. To further reduce potential impacts, SFPUC would install pilings in predrilled holes to reduce vibratory impacts from pile drivers (refer to Section A, Project Description). As a result, the impacts to historical resources would be less than significant. Additional discussion regarding vibration on nearby buildings and structures is provided in Section E.7, Noise.

Impact CR-2: The proposed project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5. (Less than Significant)

Archaeological resources are defined as those that: (1) are significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California; (2) meet the criteria for listing on the California Register; or (3) are defined as a unique archaeological resource.[58] Determining the potential for encountering archaeological resources includes factors such as the location, depth, and amount of excavation proposed, as well as any recorded information on known resources in the area.

An archaeological review was performed by a planning department staff archaeologist to determine the potential for encountering archeological resources during construction.[59] The review included a literature review of previous archaeological research results in the proposed project vicinity, review of prehistoric

[57] The bridge is a historical resource for the purposes of CEQA.

[58] A unique archaeological resource is one for which "without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: 1) contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; 2) has a special and particular quality such as being the oldest of its type or the best example of its type; or 3) is directly associated with a scientifically recognized important prehistoric or historic event or person." (CEQA Guidelines section 21083.2 [g]).

[59] San Francisco Planning Department, SFPUC Preliminary Archaeological Checklist for the Southeast Bay Outfall Islais Creek Crossing Replacement Project, December 19, 2018, revised May 30, 2019.

archaeological sensitivity modeling for the project area, and findings from the geotechnical investigation completed for the proposed project. The results of the review are summarized below.

Prehistoric Archaeological Resources

There are no known pre-historic archaeological resources in or immediately adjacent to the project site. Site CA-SFR-171, located approximately 0.3 mile from the proposed project area, is the closest known prehistoric archaeological resource to the proposed project. This site would not be affected by the proposed project. Project excavation may reach up to 48 feet below the channel bottom and piles would be installed to a depth of approximately 80 to 110 feet below the creek bottom. At these depths, multiple sediment types, including historic artificial fill, creek sediment, Young Bay Mud, and underlying pre-bay terrestrial sediments would be encountered. Soil sampling conducted to support design of the project identified abundant shell in creek sediments or interbedded alluvium in two cores, and scattered shell in the underlying Young Bay Mud in several cores. The investigations did not determine whether the shells were deposited via natural or cultural processes, but this material could represent prehistoric archaeological deposits. Excavation within the creek would extend to the depth of the identified shells. A prehistoric archaeological site, if present within the creek sediments or interbedded alluvium underlying the creek sediments, could be highly significant based on early age and rarity of the finds. Given the discovery setting within a creek channel that has been established for 8,000 to 10,000 years, it is probable that this material, even if cultural in origin, has been redeposited from its original location, and likely reworked by stream and tidal flows. Nonetheless, should the remains of a prehistoric deposit be encountered during trench excavation, the loss of information would be a potentially significant impact.

Historic-Period Archaeological Resources

The present-day Islais Creek Channel was formed in the 1920s and 1930s through the establishment of a landfill. Wood pilings still present within the creek date to the 19th century and some may be associated with the development of Butchertown, a historic industrial slaughterhouse and tannery complex that was located along the modern alignments of Third Street, Cargo Avenue, Arthur Avenue and between Evans and Fairfax Avenues on the southern shore of Islais Creek. No Butchertown facilities are located within the proposed project footprint, but these facilities are known to have used Islais Creek for waste disposal. Soil sampling conducted to support design of the project identified hair masses in a few cores, which are assumed to represent waste deposits from Butchertown. Although not in primary context, such waste deposits may contain information for understanding Butchertown activities. This material could be exposed and removed at one or more locations during trench excavations in Islais Creek based on the 3- to 16-foot depth at which the material was encountered during the geotechnical investigation. This could result in the loss of significant historical information, which would be a potentially significant archaeological impact.

Conclusion

SFPUC Standard Archeological Measures I (Archeological Discovery) and II (Archeological Monitoring) were identified to be required for implementation pursuant to the SFPUC's standard construction measures based on the planning department's archaeological review (refer to Appendix A for the full text of the measures). In accordance with Standard Archeological Measure II, a qualified archaeological consultant would develop and implement an Archeological Monitoring Plan for the project, under which the

archaeologist would observe trenching and examine spoils from the uppermost 3 to approximately 16 feet of excavation in the creek channel to identify and recover samples of the hair mass identified in geotechnical coring and any potentially associated material; and to examine any exposed strata below the base of creek sediments from depths of 10 to 25 feet to record and sample any shell concentrations. In addition, Standard Archeological Measure I, which is required pursuant to the SFPUC's standard construction measures, requires construction crew training, prior to the start of excavations, in identification of archaeological materials, and implementation of stop work provisions to allow for archaeological assessment in the event of a potential archaeological discovery, including discoveries of historic materials and of any shell concentration that might potentially represent a prehistoric deposit. Implementation of SFPUC Standard Archeological Measures I and II would minimize the potential for significant impacts to archaeological resources during construction. With the implementation of these required measures, impacts to archaeological resources would be less than significant.

Impact CR-3: The proposed project would not cause a significant adverse impact on human remains, including those interred outside of formal cemeteries. (Less than Significant)

There are no known human burials or archaeological resources that contain human remains in the area of potential effects; however, the possibility of encountering human remains, either within the context of a buried prehistoric deposit or in isolation in pre-Bay sediments, cannot be entirely discounted. Earth-moving activities associated with construction of the proposed project could result in direct impacts on previously undiscovered human remains. Therefore, the potential impact regarding disturbance to human remains could be significant. The proposed project is subject to the provisions of California Health and Safety Code, section 7050.5, with respect to the discovery of human remains. The Public Resources Code, section 5097.98, regulates the treatment and disposition of human remains encountered during construction. Furthermore, SFPUC Standard Archeological Measure I (Archeological Discovery) outlines halt-work and agency notification protocols in the event human remains or other funerary objects are encountered during construction, and development of a treatment plan. Compliance with state regulatory requirements and implementation of SFPUC Archeological Measure I would require that any human remains that might be uncovered during construction are promptly identified and appropriately protected and treated, and therefore would minimize the potential for significant impacts to human remains or other funerary objects. As a result, the impact on human remains, including those interred outside of formal cemeteries, would be less than significant.

Impact C-CR: The proposed project, in combination with cumulative projects in the vicinity, would not have a significant cumulative impact on historical resources, archaeological resources, or human remains. (Less than Significant)

The geographic scope for cumulative cultural resource impacts encompasses areas within or immediately adjacent to the proposed project site. All cumulative projects identified are assumed to involve some degree of ground disturbance during construction and to have the potential to impact historic architectural, archaeological, and human remains. However, impacts on historic and archaeological cultural resources are site specific.

The cumulative projects that would be constructed within and adjacent to the proposed project include the Islais Creek Bridge.

Historic Resources

As indicated above under Impact CR-1, there are no built structures of historic significance within the area of potential effect for the proposed project and one eligible historical resource is located within the project vicinity—Islais Creek Bridge. The proposed project would not involve construction activities on the bridge deck itself and, therefore, would not affect contributing features of the historic bridge.

The Islais Creek Bridge Rehabilitation Project involves rehabilitation and repair of the Islais Creek Bridge, located along Third Street, just east of the proposed project site. As stated above under Impact CR-1, the Islais Creek Bridge is considered significant under National Register of Historic Places and California Register of Historical Resources. The Islais Creek Bridge Rehabilitation Project would involve alterations to contributing features of the bridge, including replacement of the bascule leaves and sidewalk railings and repairs to the control tower. The State Historic Preservation Office concluded a Finding of No Adverse Effects with Standard Conditions during the section 106 compliance process for the Islais Creek Bridge Rehabilitation Project. With implementation of stipulations of the section 106 programmatic agreement[60] and rehabilitation efforts consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, the Islais Creek Bridge Rehabilitation Project would not adversely affect the Islais Creek Bridge.

Pile driving for the proposed project has the potential to overlap with pile driving for the Public Works Islais Creek Bridge Rehabilitation Project and could have a significant cumulative impact on the bridge from vibration of overlapping pile driving. As described in Section A, Project Description, and Section E.7, Noise, the SFPUC will require the development and implementation of a settlement and vibration monitoring plan to evaluate effects from pile driving. The plan includes vibratory analysis and implementation of measures to ensure that damage to adjacent structures, including the Islais Creek Bridge, would be avoided if concurrent pile driving for the proposed project and the Islais Creek Bridge Rehabilitation Project could not be avoided. Therefore, construction of the proposed project, in combination with the cumulative projects, would have a less-than-significant cumulative impact on historic resources.

Archaeological Resources

As discussed above, the proposed project's impacts would be less than significant with compliance with state regulatory requirements and the required implementation of SFPUC Standard Archeological Measures I (Archeological Discovery) and II (Archeological Monitoring). Because these impacts are site-specific and generally limited to the immediate construction area, the proposed project, in combination with other cumulative projects, would not result in a significant cumulative impact on archaeological resources and human remains. This impact would be less than significant.

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[60] First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California, January 2014

E.5. TRIBAL CULTURAL RESOURCES

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
5. TRIBAL CULTURAL RESOURCES.					
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐	☐

Impact TC-1: The proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource. (Less than Significant)

Tribal cultural resources are those resources that meet the definitions in CEQA Guidelines section 21074. Tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are also either: (a) included or determined to be eligible for inclusion in the California Register of Historical Resources, or (b) included in a local register of historical resources, as defined in Public Resources Code section 5020.1(k). All prehistoric archaeological resources in San Francisco are presumed to be potential tribal cultural resources based on the results of prior Native American consultation. A tribal cultural resource would be significantly affected if a project has the potential to substantially alter in an adverse manner the significant characteristics of the resource. Such an impact would result if such a resource were disturbed during construction.

On January 31, 2019, the planning department mailed a "Tribal Notification Regarding Tribal Cultural Resources and CEQA" to Native American tribal representatives who had requested notification of projects in the City of San Francisco. During the 30-day comment period, no Native American tribal representatives contacted the planning department to request consultation. However, as noted above, based on prior Native American consultation, all prehistoric resources in San Francisco are presumed to represent tribal cultural resources. As discussed under Impact CR-2, previously undiscovered prehistoric archaeological

resources may be encountered during construction, and such resources could be identified as tribal cultural resources at the time of discovery or a later date. Therefore, the potential effects of the proposed project on previously unidentified archaeological resources, as discussed under Impact CR-2, represent a potentially significant impact on tribal cultural resources.

Standard Archeological Measure I (Archeological Discovery) requires notification and consultation with the affiliated Native American tribal representatives upon discovery of a tribal cultural resource. The representative would be offered the opportunity to monitor archaeological field investigations of the site and to consult regarding the appropriate treatment and, if applicable, interpretation of the site and the recovered materials. An interpretive plan produced in consultation with the environmental review officer (ERO) and affiliated tribal representatives, at a minimum, and approved by the ERO would be required to guide the interpretive program. The plan would identify, as appropriate, proposed locations for displays or installations, the proposed content and materials of those displays or installations, the producers or artists of the displays or installations, and a long-term maintenance program. The interpretive program may include artist installations, preferably by local Native American artists, oral histories with local Native Americans, artifact displays and interpretation, educational panels, or other informational displays. SFPUC Standard Archeological Measure I (Archeological Discovery), SFPUC Standard Archeological Measure II (Monitoring), and SFPUC Standard Archeological Measure III (Testing), which set forth procedures for identification, protection and treatment of archaeological resources (which may also be tribal cultural resources), would ensure that any potential tribal cultural resource encountered during construction excavation is promptly recognized, appropriately treated and, if applicable, subject to an interpretive program developed in consultation with the associated Native American tribal representatives. Impacts on tribal cultural resources would be less than significant.

Impact C-TC: The proposed project, in combination with other cumulative projects in the vicinity, would not result in a significant cumulative impact on tribal cultural resources. (Less than Significant)

The geographic scope for cumulative tribal cultural resource impacts encompasses areas within or immediately adjacent to the proposed project site; impacts on tribal cultural resources are site specific.

All of the cumulative projects identified are assumed to involve some degree of ground disturbance during construction and, therefore, have the potential to uncover and disturb previously unidentified tribal cultural resources. The proposed project's impacts would be less than significant with required implementation of SFPUC Standard Archeological Measures I (Archeological Discovery) and II (Archeological Monitoring), by requiring identification/discovery efforts, testing/evaluation, and either preservation in-place or archeological data recovery, and implementation of an interpretive program for tribal cultural resources. Because these impacts are site-specific and generally limited to the immediate construction area, the proposed project, in combination with other reasonably foreseeable cumulative projects, would not result in a significant cumulative impact on tribal cultural resources. This impact would be less than significant.

E.6. TRANSPORTATION AND CIRCULATION

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

In accordance with the Transportation Impact Guidelines,[61] the planning department uses significance criteria to facilitate the transportation analysis and address the CEQA Guidelines Appendix G checklist criteria. The department separates the significance criteria into construction and operation. Significance criterion E.6(a) addresses construction impacts while significance criteria E.6(b) through E.6(g) address operational impacts. According to the guidelines, construction impact analysis considers the intensity of project construction activities as well as the anticipated duration. Project construction that is not multi-phased or longer than 30 months is generally considered not to be of an extended duration or intensity.

61 San Francisco Planning Department, *Transportation Impact Analysis Guidelines*, February 14, 2019.

Following construction, traffic operations in the project area would revert to existing conditions. The proposed project would not permanently change the transportation network or existing traffic patterns. Operation of the proposed project would not require a permanent workforce; pipelines and appurtenances would continue to be unmanned and operated remotely. Maintenance would be conducted similar to existing conditions on an as-needed basis by existing SFPUC personnel and would not require any additional personnel (see Section A.7, Operations and Maintenance). As such, no impacts related to transportation and circulation would result from project operations and Topics E.6(b) through E.6(g) are not discussed further.

Regional Roadways

The project site is located approximately 1.4 miles northeast of the I-280 and U.S. 101 interchange, and both I-280 and U.S. 101 provide freeway access to and from the project site. The project area can be accessed from the Cesar Chavez Street off ramps along both I-280 and U.S. 101 in the eastbound direction.

Local Roadways

Local access to the project site is provided by arterial and local roadways. To the north of the project site, the roadway network is generally an east-west and north-south grid. To the south of the project site, the grid transitions to a generally northwest-southeast and northeast-southwest grid. Streets near the project site are predominantly two-way. Major arterials in the vicinity of the project site are described below and shown in Figure 1, p. 2 and Figure 2, p. 5. Turning movement counts for these major arterials were collected on May 24, 2018, August 1, 2018, and January 24, 2019 during the a.m. (7 a.m. to 9 a.m.) and p.m. peak periods (4 p.m. to 6 p.m.).

- **Cesar Chavez Street** in the vicinity of the project site has two travel lanes in both the eastbound and westbound directions, with on-street parking on either side, except on the street segment between Third Street and Illinois Street. The portion of Cesar Chavez Street nearest to the project site carries the highest volumes of traffic with approximately 1,870 and 1,600 vehicles during the a.m. and p.m. peak hours, respectively.[62]

- **Evans Avenue** runs east-west and has two travel lanes in each direction in the vicinity of the project site, with on-street parking on both sides of the street, except on the street segment between Third Street and Phelps Street. It carries approximately 1,320 and 1,230 vehicles during the a.m. and p.m. peak hours, respectively.[63]

- **Third Street** runs north-south between Bayshore Boulevard and Market Street and crosses Islais Creek at the Islais Creek Bridge, directly east of the proposed project site. In the vicinity of the project area, Third Street has two travel lanes in each direction, with no on-street parking available on either side. The T-Third light rail is located within a center median along Third Street. Third

62 CHS Consulting Group, Traffic Count Data for the SFPUC Islais Creek Crossing Replacement Project, August 2019.

63 Ibid.

Street carries approximately 1,500 and 1,470 vehicles during the a.m. and p.m. peak hours, respectively.[64]

Local roadways in the vicinity of the project site, including the proposed staging areas, are described below.

- **Rankin Street** is a north-south discontinuous roadway that is approximately 1 mile long between Revere Avenue to the south and the Islais Creek Channel, with interruptions between Evans Avenue and Jerrold Street due to the Southeast Treatment Plant. In the immediate project vicinity, it is approximately three blocks long and has one travel lane in each direction and on-street parking on both sides of the street.

- **Quint Street** is a north-south discontinuous roadway between Evans Avenue to the south and Arthur Avenue to the north, adjacent to Islais Creek Park. It has one travel lane in each direction and on-street parking on both sides of the street.

- **Tennessee Street** is a north-south discontinuous roadway between the Islais Creek Channel at the southern terminus and Mariposa Street at the northern terminus. It has one travel lane in each direction and on-street parking on both sides of the street.

- **Cargo Way** is an east-west roadway with two travel lanes in each direction and terminates at Third Street to the west and Jennings Street to the east. On-street parking is not available on any portion of Cargo Way.

- **Illinois Street** is a north-south roadway that has one travel lane in each direction and terminates to the north at 16th Street and to the south at Cargo Way. On-street parking is available on both sides of the street with the exception of the southernmost section, which spans the Islais Creek Channel via the Illinois Street Bridge.

- **Amador Street** is a roadway that transitions between an east-west orientation to northwest-southeast orientation between Cargo Way and Jennings Street. It traverses through the Pier 94 Backlands, Pier 94, and Pier 96 areas, has one travel lane in each direction, and on-street parking is intermittently permitted in the off-shoulder areas. Amador Street is owned by the Port of San Francisco, but public access is not restricted.

- **Custer Avenue** is a northwest-southeast oriented roadway that spans two blocks between Third Street and Rankin Street. It has one travel lane in each direction and provides on-street parking on both sides of the street.

- **Marin Street** is a discontinuous east-west oriented roadway that terminates at a dead end just past Michigan Street to the east and Bayshore Boulevard to the west. Near the project site, it has one travel lane in each direction and provides on-street parking on both sides of the street east of Illinois Street and on-street parking on the south side of the street west of Illinois Street.

64 Ibid.

The general plan designations for the roads in the project vicinity include:

- Major Arterials (Cesar Chavez Street, Evans Avenue, and Third Street)
- Designated Freight Traffic Routes (Third Street and Cargo Way)
- Transit Preferential Street (Third Street)
- Citywide Pedestrian Network Street (Third Street)
- Neighborhood Commercial Pedestrian Street (Third Street)

In the project vicinity, the Better Streets Plan identifies Cesar Chavez Street, Evans Avenue, Third Street, Quint Street, Rankin Street, Tennessee Street, Illinois Street, Custer Avenue, Marin Street, and Cargo Way as Industrial Streets, and Amador Street as an *Unaccepted/Paper Street*.[65]

Cesar Chavez Street and Third Street are also part of the *San Francisco Vision Zero High Injury Network*, which outlines projects and policy changes to address street safety to reduce serious injuries.

Bicycle Routes

Bicycle routes are classified as *class I, class II, class III*, or *class IV* facilities. Class I bikeways are bike paths with exclusive rights-of-way for use by bicyclists, with minimal cross flow by motorized vehicles. Class II bikeways are bike lanes striped within the paved areas of roadways and established for the exclusive use of bicyclists. Class III bikeways are signed bike routes that allow bicycles to share streets with vehicles. Class IV bikeways are on-street separated bikeways reserved for bicyclists, with physical separation between the bikeway and travel lanes. Bicycle facilities near the proposed project include all four bikeway classifications. Roadways associated with these bikeways are described below and shown in Figure 1, p. 2 and Figure 2, p. 5.

- Class I bikeway: Illinois Street Bridge spanning the Islais Creek Channel
- Class II bikeways: Illinois Street south of Mariposa Street, Cesar Chavez Street east of Pennsylvania Street, and Indiana Street south of Cesar Chavez Street
- Class III bikeways: Third Street and Evans Avenue south of Cesar Chavez Street and along Cesar Chavez Street west of Pennsylvania Street
- Class IV bikeway: Cargo Way between Jennings Street and Illinois Street

Bicycle volumes across the Islais Creek Bridge are generally low. During p.m. peak hours, there were approximately 23 bicyclists at the Third Street and Cargo Way intersection and 10 bicyclists at the Third Street and Marin Street intersection.[66] Along the proposed project truck routes, the highest bicycle volumes were observed along Cesar Chavez Street (a class II/III bikeway) with approximately 50 and 95 bicycle trips during the a.m. and p.m. peak hours, respectively, at the Evans Street intersection. At the Third Street and

[65] Unaccepted/Paper Streets are mapped streets but not "accepted" for maintenance by the City because they do not meet City standards for street construction.

[66] CHS Consulting Group, *Islais Creek Rehabilitation Project.* Transportation Impacts Study, Final, February 2020.

Evans Avenue intersection, 24 and 10 bicycle trips were observed during the a.m. and p.m. peak hours, respectively, and at the Third Street and Cesar Chavez intersection, 39 and 29 a.m. and p.m. peak hour bicycle trips were observed, respectively. [67]

Pedestrian Facilities

Pedestrian facilities generally include sidewalks, crosswalks, curb ramps, pedestrian signals, and streetscape and landscape amenities (e.g., benches, tree-lined buffers, planters, bulb-outs, street lighting). The project site is located within an industrial area where pedestrian facilities are typically lacking or discontinuous; however, Cesar Chavez Street, Evans Avenue, Cargo Way, and Third Street are part of the Vision Zero High Injury Network and have sidewalks on both sides of the street in the project vicinity. Quint Street has a sidewalk on the east side of the street. Illinois Street has a sidewalk on the west side of the street (the east side is reserved for bicycle use only) from Cargo Way north to Marin Street. Marin Street has a sidewalk on the north side of the street. Tennessee Street, Custer Avenue, Rankin Street, Amador Street do not have any sidewalk facilities.

The pedestrian volumes in the project vicinity range between 47 and 80 pedestrian crossings during the p.m. peak hour. Pedestrian volumes in the vicinity of the Islais Creek Bridge were generally low, with approximately 59 pedestrian crossings just north of the bridge at the Third Street and Marin Street intersection and 29 pedestrian crossings just south of the bridge at the Third Street and Cargo Way intersection during the p.m. peak hour.[68] The proposed truck access routes (i.e., Cesar Chavez Street, Third Street, and Evans Avenue) are generally aligned with sidewalks and the highest number of pedestrian volumes was observed at the Third Street and Evans Avenue intersection with approximately 99 and 80 pedestrian crossings during the a.m. and p.m. peak hour, respectively. At the Evans Avenue and Cesar Chavez intersection, approximately 39 pedestrian crossings were observed during the a.m. peak hour and 47 during the p.m. peak hour. At the Third Street and Cesar Chavez intersection, 26 a.m. peak hour and 38 p.m. peak hour pedestrian crossings were observed.[69]

Transit Network

The municipal transportation agency operates a light rail route (KT-Ingleside/Third Street) and four municipal transportation agency bus routes (19-Polk, 44-O'Shaughnessy, 48-Quintara/24th Street, 23-Monterey, 54-Felton, and 91-3rd Street/19th Avenue Owl) in the project vicinity. These routes travel along Third Street, as well as along Evans Avenue and Phelps Street south of the project site and 25th Street north of the project site. The KT-Ingleside/Third Street light rail route and the 91-3rd Street/19th Avenue Owl bus route are the only routes in the immediate vicinity of the project site.

Construction Trip Generation

Project traffic volumes during construction were estimated based on the number of construction-related vehicle trips needed in each phase, including trips made by construction workers traveling to and from the project site, hauling, and material-delivery truck trips. Project construction activities would occur at varying levels of intensity during the construction period, which would require approximately 27 months

67 CHS Consulting Group, *Traffic Count Data for the SFPUC Islais Creek Crossing Replacement Project*, August 2019.

68 CHS Consulting Group, *Islais Creek Rehabilitation Project,* Transportation Impacts Study, Final, February 2020.

69 CHS Consulting Group, *Traffic Count Data for the SFPUC Islais Creek Crossing Replacement Project*, August 2019.

of active construction starting in 2021. The number of daily workers would range between one and 160 workers per day, depending on the phase of construction, with an average of approximately 27 workers on site each day during active construction. Total daily construction worker vehicle trips would average approximately 54 vehicle trips per day, with a peak of up to 320 trips a day during the most intense phase of the proposed project, which would occur over a one-month period. The peak estimated traffic volume conservatively assumes all workers would drive separately to the proposed project site during this one-month period, and that each worker would make one inbound and one outbound trip per day. The number of daily hauling and material-delivery trips would vary from none to 27 truck trips depending on the phase of construction. These construction trips would occur at varying levels of intensity over the course of the 3.5-year construction timeframe. On an average day, the project construction would generate approximately 56 vehicle trips (54 worker trips and two truck trips).

To provide a conservative estimate of construction traffic volumes for traffic analyses, the highest combined traffic volume was used. Overall, the highest combined construction traffic volume is anticipated to occur for one month when the proposed project would generate up to 320 daily worker vehicle trips and 27 truck trips. Half of the daily worker trips are assumed to be inbound trips during the a.m. peak hour and the remaining half are assumed to be outbound trips during the p.m. peak hour. Daily truck trips were assumed to spread over a 12-hour period from 7 a.m. to 7 p.m. Table 4 shows daily and peak hour trip generation during the highest volume construction period and Table 5 shows daily and peak hour trip generation on the average construction day.

TABLE 4. MAXIMUM TRIP GENERATION DURING PROJECT CONSTRUCTION

Vehicle Type	Daily			AM Peak Hour			MD Peak Hour			PM Peak Hour		
	IB	OB	Total	IB	OB	Total	IB	OB	Total	IB	OB	Total
Worker Vehicle Trips	160	160	320	160	0	160	0	0	0	0	160	160
Truck Trips	14	14	27	2	0	2	1	1	2	0	2	2
Total	**174**	**174**	**347**	**162**	**0**	**162**	**1**	**1**	**2**	**0**	**162**	**162**

Notes:
IB = Inbound; OB = Outbound; MD = Mid-day

Source: CHS Consulting Group, 2019

TABLE 5. AVERAGE TRIP GENERATION DURING PROJECT CONSTRUCTION

Vehicle Type	Daily			AM Peak Hour			MD Peak Hour			PM Peak Hour		
	IB	OB	Total	IB	OB	Total	IB	OB	Total	IB	OB	Total
Worker Vehicle Trips	27	27	54	27	0	27	0	0	0	0	27	27
Truck Trips	1	1	2	1	0	1	0	0	0	0	1	1
Total	**28**	**28**	**56**	**28**	**0**	**28**	**0**	**0**	**0**	**0**	**28**	**28**

Notes:
IB = Inbound; OB = Outbound; MD = Mid-day

Source: CHS Consulting Group, 2019

Construction worker vehicle trips are expected to be dispersed between various staging areas with approximately 50 percent of the construction workers traveling to the Pier 94 Backlands and Pier 96 staging areas and 50 percent traveling to the staging areas located immediately north and south of the project site

(Islais Creek Park, Tennessee Street, Illinois Street, and Rankin Street staging areas).[70] Truck trips were assumed to be split between north and south of the project site.

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

Traffic Circulation

During the peak month of construction activity, the proposed project would result in a temporary increase in vehicular traffic traveling to and from the project site and off-site staging areas. The project would generate a maximum of approximately 27 truck trips and a maximum of 320 construction worker trips per day during the one-month peak period of construction activity. The peak period of construction activity would be short term, occurring for one month out of the 3.5-year total construction duration.

Due to construction work required in Third Street, project activities would require nighttime closure of either the two southbound travel lanes or two northbound travel lanes on Third Street between Marin Avenue and Cargo Way for a total of approximately nine months (one seven-month and one two-month period). During the northbound travel lane closures, northbound traffic would be rerouted to the northbound lanes on Illinois Street and, during the southbound travel lane closures, southbound traffic would be detoured to the southbound lanes on Illinois Street. Northbound and/or southbound traffic on Third Street may also be diverted to Cesar Chavez Street and Evans Avenue. In addition to the nighttime closures, the two southbound lanes on Third Street between Marin Avenue and Cargo Way would be closed 24 hours per day for three weeks (during the seven-month nighttime closure period). Southbound traffic would be diverted to either Illinois Street or Cesar Chavez Street and Evans Avenue.

Construction activities affecting the public right-of-way within San Francisco must comply with the San Francisco Transportation Code, and the San Francisco Public Works Code. The transportation code provides the authority for the municipal transportation agency's Regulations for Working in San Francisco Streets, also known as the *Blue Book*. The Blue Book is a manual for city agencies, utility crews, private contractors, and others doing work in San Francisco streets. Among other things, the public works code regulates construction operations (e.g. excavation or street closure) in the public right-of-way so that these actions are carried out while maintaining public safety and convenience. Depending on the type of construction activity (i.e., proposed long-term travel lane and sidewalk closures), a permit approval by the municipal transportation agency may first require recommendation for approval from the Transportation Advisory Staff Committee, a multi-agency review body. For most large projects, public works requires a contractor to prepare and submit a contractor parking plan, which requires transportation demand management measures.

[70] Of the workers going to the staging areas in the north or south of the project area, CHS assumed about 20 percent would park north of the project area and 80 percent would park south of the project area based on general assessment parking availability.

In compliance with the Blue Book, the construction contractor would be required to obtain a permit for the proposed lane closures on Third Street. Through the permit review and approval process, appropriate detours and signage would be required to maintain circulation and the safety of vehicles, bicyclists, and pedestrians. The proposed lane closures would be temporary and limited to nighttime closures when traffic volumes on Third Street are low, with the exception of one three-week period when 24-hour southbound lane closures would be required. During these temporary lane closures, circulation is not anticipated to be adversely affected because traffic would be rerouted to nearby Illinois Street or, as an alternative, to Cesar Chavez Street and Evans Avenue. The proposed detour routes would provide sufficient capacity for diverted vehicles and motorists would not experience extended queues.[71]

As described in Section A.6.19, SFPUC Standard Construction Measures, traffic control measures would be implemented as a part of the proposed project to minimize potential impacts from truck traffic on circulation and reduce potential safety hazards associated with proposed construction activities. These traffic control measures would conform to the municipal transportation agency's Blue Book. The traffic control measures may include, but would not be limited to:

- Scheduling truck trips during non-peak hours to the extent feasible. In the event of travel lane closure on southbound lanes on Third Street, detour of southbound travel to Illinois Street or Cesar Chavez Street and Evans Avenue and installation of advanced warning signs on Third Street to the north of Cesar Chavez Street and to the south of Evans Avenue to provide road users advance notice of the detours and to minimize hazards associated with rerouting traffic.

- Deployment of flaggers where workers or equipment would temporarily block a travel lane for access into and out of a construction area.

- Use of flaggers, illuminated signs, a temporary stop sign, or a combination of these methods to slow approaching traffic where construction trucks are making wide turns.

- Implementation of roadside safety protocols, such as advanced "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow along Third Street.

- Surveying the condition of the roadways along Third Street prior to construction to ensure that the roadway is repaired and restored to its original condition upon completion of construction.

- Storage of all equipment and materials in designated staging areas to minimize obstruction of traffic.

Bicycle Facilities

The two southbound travel lanes or the two northbound travel lanes on Third Street between Marin Avenue and Cargo Way would require closure for up to a total of nine months during nighttime construction activities, as previously described. Additionally, the two southbound lanes of Third Street

[71] CHS Consulting Group, *Islais Creek Rehabilitation Project*, Transportation Impacts Study, Final, February 2020.

between Marin Avenue and Cargo Way would be closed 24 hours per day for three weeks during the seven-month period. The lane closure could temporarily inconvenience bicyclists traveling south on Third Street, which provides a class III bicycle route. The southbound bicycle traffic across the bridge would be rerouted to the class I/II bike lanes along Illinois Street, or as an alternative, to Cesar Chavez Street and Evans Avenue. Furthermore, this closure would primarily occur during nighttime hours when bicycle traffic volumes are low.

The proposed project would generate approximately two haul truck trips in the a.m. and p.m. peak hours along Cesar Chavez Street, Evans Avenue and Third Street, which are part of the citywide bicycle network. Because the truck volumes are low and trucks would make turns at the signalized intersections along these roadways, potential conflicts between bicyclists and trucks would be low and similar to baseline conditions, where trucks currently make turns at these intersections. Although the proposed project would generate up to 160 construction worker vehicle trips during the a.m. and p.m. peak hours within the same bicycle network, these vehicle trips would be dispersed throughout the project area in order for workers to mobilize and park vehicles at the various staging areas over the a.m. and p.m. peak hour. The construction worker vehicle trips would not create any substantial queues or block access for bicyclists. Traffic conditions during project construction would remain consistent with the existing use of the roadways and similar to existing traffic conditions.

Because construction of the proposed project would not affect the availability or accessibility of bicycle facilities and would not result in conflicts between bicyclist and construction traffic or cause adverse impacts to local bicycle circulation, impacts on bicycle facilities would be less than significant.

Pedestrian Facilities

Project construction would require nighttime closure of either the two southbound travel lanes or the two northbound travel lanes on Third Street between Marin Avenue and Cargo Way for one seven-month period and one two-month period and would require closure of the two southbound lanes 24 hours per day for three weeks during the seven-month period. As previously discussed, Third Street is part of the Vision Zero High Injury Network and has sidewalks on both sides of the street in the project vicinity. While the lane closure could temporarily inconvenience pedestrians, pedestrian access across the bridge would be maintained through a detour to the sidewalk on the opposite side of Third Street from the lane closure. Closures would primarily occur at night when pedestrian volumes are low, with the exception of a three-week period. Furthermore, in accordance with the Blue Book, SFPUC would ensure that pedestrian access is maintained for all users, and that pedestrians are notified of alternative pedestrian access routes and detours by posting adequate signage. Therefore, the project construction would not cause adverse impacts to local pedestrian circulation. The impact on pedestrian facilities would be less than significant.

Transit

The proposed project would require closing the two southbound travel lanes or the two northbound travel lanes on Third Street during nighttime construction for one seven-month period and one two-month period and would require closure of the two southbound lanes on Third Street 24 hours per day for three weeks during the seven-month period. The KT-Ingleside/Third Street light rail route operates along Third Street between the hours of 4 a.m. and 2 a.m.; however, operation would not be affected since the light rail has its

own right-of-way in the middle of the roadway. Light rail passengers would enter and exit the Third Street and Marin Street station from the east side of Third Street; therefore, access to the station would not be affected by the southbound lane closure. The proposed anchor rods under Third Street would be installed using a directional drill that would travel beneath the light-rail tracks in the center of Third Street and would not affect light trail operation. The 91-3rd Street/19th Avenue Owl bus route operates along Third Street between midnight and 6 a.m. and would be rerouted to Illinois Street or Cesar Chavez Street and Evans Avenue during the lane closure of Third Street. Construction would generate an average of 27 construction worker vehicle trips and up to 160 construction worker vehicle trips during the a.m. and the p.m. peak hours on roads that have transit operations. Construction worker vehicle trips would be spread along proposed project access routes to and from the various project staging areas including Evans Avenue and Third Street and would not cause potential conflict with transit operation or substantially delay public transit. As described under traffic circulation above, up to two construction trucks would access the site during the peak hour. Trucks may cause a few seconds of delay due to slower movements and larger turning radii. The few seconds of delay would not conflict with transit operation or substantially delay public transit. The project would have a less-than-significant impact on transit.

Emergency Access

The nearest San Francisco Fire Department Station (Fire Station No. 25 at 3305 Third Street) is located on the east side of Third Street just south of the Islais Creek Channel, approximately 200 feet from the project site. The nearest police station is the Bayview police station, located at 201 Williams Avenue, approximately 1.5 miles south from the project site. Zuckerberg San Francisco General Hospital and Trauma Center is approximately 1 mile northwest of the project site and UCSF Benioff Hospital is approximately 1.25 miles north of the project site. The street network serving the project vicinity currently accommodates the movements of emergency vehicles. The proposed project would have temporary impacts on traffic flow and lane configurations near the project site. As described above, project construction would require closure of the two southbound travel lanes or the two northbound travel lanes on Third Street between Marin Avenue and Cargo Way during nighttime construction for one seven-month period and one two-month period and would require closure of the two southbound lanes of Third Street 24 hours per day for three weeks during the seven-month period. During lane closures, affected traffic from either the northbound or the southbound lanes would be rerouted to Illinois Street or to Cesar Chavez Street and Evans Avenue and the emergency vehicle access would be maintained via this detoured route.

Furthermore, the traffic control measures included as a part of SFPUC's Standard Construction Measure 4 (Traffic) would require coordination with local emergency responders to maintain emergency access. These measures would conform to the Blue Book and would specify the circulation and detour plans during construction and require the contractor to notify the police and emergency responders of any lane or road closure and traffic control measures to be implemented. Compliance with the requirements of municipal transportation agency and San Francisco Public Works and implementation of the traffic control measures included in SFPUC's Standard Construction Measure 4 (Traffic) would minimize potential impacts to emergency access. Furthermore, although the proposed project would temporarily generate additional traffic, such an increase in vehicles would not impede or hinder the movement of emergency vehicles in the project vicinity because California law requires that drivers yield the right-of-way to emergency vehicles and remain stopped until the emergency vehicle passes (California Vehicle Code section 21806).

The impact on emergency access would be less than significant because emergency access would be maintained on local roads throughout the duration of construction.

Conclusion

Active construction of the proposed project would not require a substantially extended duration or intensive activity. With implementation of SFPUC's Standard Construction Measure 4 (Traffic) and compliance with the Blue Book, project construction would not create potentially hazardous conditions for people walking, bicycling, or driving, or public transit operations; or interfere with emergency access or accessibility for people walking or bicycling; or substantially delay public transit. Impacts would be less than significant.

Impact C-TR: The proposed project, in combination with cumulative projects, would not contribute considerably to adverse cumulative transportation conditions. (Less than Significant)

The cumulative analysis considers the construction-phase traffic of the proposed project and cumulative projects where construction schedules would overlap. The geographic scope for potential cumulative impacts includes roadways where the cumulative projects have the potential for overlapping effects with the proposed project (i.e., use of same roadways). The proposed project would geographically and potentially temporally overlap with the following projects from Table 3, p. 38: Cargo Way Sewer Box Odor Reduction Project, Islais Creek Bridge Rehabilitation Project, the Southeast Community Facility, and Islais Creek North Combined Sewer Discharge Condition Improvement and Backflow Prevention Project.

As discussed above, no impacts related to transportation and circulation would result from project operations. Thus, the project would not contribute to any potential cumulative operational impact associated with transportation and circulation (no impact).

Construction of the proposed project and cumulative projects could result in a significant cumulative transportation impact if combined construction activities would result in potentially hazardous conditions or interfere with access for pedestrians, bicyclists, motorists, transit operations, and emergency vehicles in areas where construction-related traffic congestion, road closures, and detours overlap on Quint Street, Evans Avenue, Rankin Street, and Third Street. As described in the discussion for Impact TR--1, during construction, the proposed project would require a total of nine months of nighttime closures of the sidewalk and the two southbound traffic lanes or two northbound traffic lanes on Third Street between Marin Street and Cargo Way, as well as closure of the two southbound lanes 24 hours per day for three weeks. The Public Works' Islais Creek Bridge Rehabilitation Project would require closure of the northbound lanes on Third Street between Marin Street and Cargo Way for approximately one year, and closure of the outside northbound and southbound travel lanes for approximately four months. During these two closure periods for the Islais Creek Bridge Rehabilitation Project, one travel lane would be maintained in each direction. In addition, the Islais Creek Bridge Rehabilitation Project may require the full closure of Third Street (all lanes) and the KT Ingleside-Third Street light rail line for up to four months during construction of that project. In the event that there is overlap between the southbound lane closures for the proposed project and the northbound lane closures for the Islais Creek Bridge Rehabilitation Project, it would result in a full road closure during the nighttime hours for up to nine months. Cumulative impacts are discussed by travel mode below.

Traffic Circulation and Emergency Access

During a full road closure, all traffic would be diverted to alternative routes, including Illinois Street and Evans Street. A significant cumulative impact on traffic circulation and emergency access could result if lane or road closures for the proposed project and cumulative projects overlap to cause conflicting detours or substantial traffic delays for emergency responders or impaired access to transit. However, a capacity analysis of alternative roadways determined that the alternative roadways (Illinois Street and Evans Street) would have sufficient capacity to accommodate the cumulative construction traffic without causing extended queues.[72] Furthermore, the proposed project, and all cumulative projects, would be required to comply with the constraints of excavation permits and the Blue Book. If a project is unable to comply with Blue Book and excavation permit requirements for work within the public right-of-way, the project sponsor is required to apply for a Special Traffic Permit with the municipal transportation agency. As part of the Special Traffic Permit process for capital projects, the municipal transportation agency prepares traffic specifications that allow for defined lane reductions during certain hours and documents any transit coordination that has been conducted between the municipal transportation agency and project sponsor during design phase field meetings. In addition, project sponsors are required to conduct outreach and coordinate with all affected parties in these instances. Furthermore, in compliance with SFPUC's Standard Construction Measure 4 (Traffic), SFPUC would implement traffic control measures to reduce potential safety hazards associated with the project construction activities. The measures would conform to the Blue Book and, in the event of closure of all lanes on Third Street, may include, but would not be limited to, installation of advanced detour signs on Third Street (to the north of Marin Street and to the south of Cargo Way) to notify users regarding the detour to Illinois Street and Illinois Street Bridge. In addition, San Francisco Public Works also has standard construction measures including Standard Construction Measure 4 (Traffic) with the same requirements as the SFPUC's measure 4. Compliance with construction transportation regulations (such as the Blue Book), Special Traffic Permit requirements, and SFPUC Standard Construction Measure 4 (Traffic) and Public Works Standard Construction Measure 4 (Traffic), would result in less-than-significant cumulative impacts on transportation conditions.

Bicycle and Pedestrian Facilities

As previously discussed, a relatively low volume of pedestrians and bicyclists cross the Islais Creek. During the full closures of Islais Creek Bridge for both projects, pedestrian and bicyclists would be temporarily rerouted to Illinois Street and the Illinois Street Bridge. SFPUC would notify pedestrians and bicyclists of alternative pedestrian and bicycle access routes and detours by posting advance signage in accordance with the Blue Book and SFPUC Standard Construction Measure 4 (Traffic). The cumulative impact on pedestrian and bicycle facilities would be less than significant.

Transit

In the event of a full road closure for the proposed project, operation of the KT-Ingleside/Third Street light rail route on Third Street would not be affected because the light rail has its own right-of-way in the centerline of the roadway. Light rail passengers would enter and exit the Third Street and Marin Street station from the east side of Third Street; therefore, access to the station would not be affected by the road closure. Construction of the Islais Creek Bridge Rehabilitation Project would entail a full road closure that

[72] CHS Consulting Group, *Islais Creek Rehabilitation Project*, Transportation Impacts Study, Final, February 2020.

would prevent operation of the KT-Ingleside/Third Street light rail route and require an alternate bus route instead. The 91-3rd Street/19th Avenue Owl bus route would likely be rerouted along Illinois Street during road closures on Third Street. In accordance with the Blue Book and Public Works Standard Construction Measure 4 (Traffic), Public Works would coordinate the rerouting of the bus line with the municipal transportation agency in advance of the road closure. The cumulative impact on transit facilities would be less than significant.

E.7. NOISE

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
7. NOISE—Would the project:					
a) Generate 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?	☐	☐	☒	☐	☐
b) Generate excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐	☐
c) For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	☒

The project site is not located in the vicinity of a private airstrip. Therefore, Topic E.7(c) is not applicable and is not discussed further.

Existing Noise Sources and Levels

The project site is located in an industrial area with various noise sources in the vicinity, including vehicle traffic on I-280 and Caltrain operation (both approximately 1,400 feet west of the project site), traffic along adjacent roadways, operation of nearby industrial facilities, and T-Third Street light-rail line operation adjacent to the project site.

According to the San Francisco General Plan, Background Noise Level Map, noise levels within the project vicinity are expected to range from 65 dBA[73] to over 70 dBA L_{dn}, depending on proximity to rail lines and high-volume roadways such as I-280.[74,75] Noise levels in the project area have been measured at 74 dBA L_{eq}[76] at Cesar Chavez and Mississippi Street[77] (located approximately 0.25 mile northwest from the project site) and 68 to 72 dBA L_{eq} at 521 Evans Avenue[78] (located approximately 0.3 mile south from the project site). Nighttime ambient noise levels within the project vicinity have been previously measured between

73 The A-weighted sound level (dBA) is a sound pressure measurement that de-emphasizes the very low- and very high-frequency components of the sound. The de-emphasis of the very low and high frequencies mimics the frequency response of the human ear and correlates well with subjective reactions to noise.

74 The DNL or Ldn is the Leq, or Energy Equivalent Level, of the A-weighted noise level over a 24-hour period with a 10-dB penalty applied to noise levels between 10 p.m. to 7 a.m.

75 San Francisco General Plan, Environmental Protection Element, Map 1, Background Noise Levels – 2009, *http://generalplan.sfplanning.org/images/I6.environmental/ENV_Map1_Background_Noise%20Levels.pdf*, accessed on April 10, 2018.

76 Equivalent sound level (Leq) is the average A-weighted sound level during the entirety of a stated time period.

77 CPUC, PG&E's Potrero to Hunters Point 115 kV Cable Project Final Mitigated Negative Declaration, 2004.

78 San Francisco Planning Department, Southeast Plant Headworks Replacement Project Final MND, December 19, 2016.

60 and 70 dBA.[79] Berth 10 is located in a heavily industrialized area in the City of Oakland. Heavy trucks, equipment, and harbor craft are routinely used in the area.

Noise-Sensitive Receptors

Noise-sensitive receptors generally include hospitals, skilled nursing/convalescent care facilities, schools, daycares, churches, libraries, and residences. The nearest sensitive receptor is a five-story multi-family structure located approximately 1,200 feet northwest of the project site at the corner of Cesar Chavez Street and Indiana Street, which is approximately 820 feet from the nearest construction staging area on Tennessee Street. The nearest sensitive receptors to Berth 10 are located over 0.6 mile away, and beyond the distance at which construction noise could travel. Noise from the Berth 10 staging area is not discussed further.

Existing Vibration Sources

The Caltrain railroad tracks, located approximately 0.25 mile west of the project site, are an existing source of vibration.[80] The project site is located approximately 400 feet south of the Third and Marin Street station along the municipal transportation agency KT-Ingleside/Third Street light rail route, which is also a source of vibration. The spur railroad tracks that are located along Quint Street and adjacent to the project site also generate vibration when materials are being transported.

Vibration-Sensitive Receptors

Receptors sensitive to vibration include structures (especially older masonry structures), people (especially residents, the elderly and the sick), and equipment (e.g., magnetic resonance imaging equipment, high-resolution lithographic, optical and electron microscopes).[81] Potential vibration-sensitive structures near the project site have been identified based on their proximity to the project site and staging areas, and include buildings and infrastructure that may experience damage as a result of proposed construction activities. Potential vibration-sensitive structures include the Islais Creek Bridge, the emergency bypass pipeline (described in Section A.4, Project Purpose and Need), the existing 60-inch onshore pipeline along the northern bank of Islais Creek, the existing 42-inch-diameter effluent pipeline crossing Islais Creek, the booster station (located several feet south of the project site), and an industrial warehouse (located on Third Street on the northern bank of Islais Creek approximately 25 feet north of the project site). As described above, the nearest vibration-sensitive individuals are residents located approximately 1,200 feet northwest of the project site.

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79 San Francisco Planning Department, *Southeast Plant Headworks Replacement Project Final Mitgated Negative Declaration*, December 19, 2016.

80 Vibration is the physical manifestation of energy carried through the earth and structures. Groundborne vibration consists of rapidly fluctuating motions or waves. It has the potential to annoy people and damage buildings. The most common descriptor used to quantify construction vibration amplitude in relation to impacts to structures is the peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec).

81 U.S. Department of Transportation, Federal Transit Administration, Office of Planning and Environment. Transit Noise and Vibration Impact Assessment, September 2018.

Impact NO-1: The proposed project would not result in 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. (Less than Significant)

Applicable Noise Standards

San Francisco Noise Ordinance

Construction noise is regulated by the San Francisco Noise Ordinance (article 29 of the San Francisco Police Code). The following sections of the noise ordinance are used to determine the significance of construction-related noise increases:

- **Daytime Construction Noise** is evaluated using section 2907 of the police code, which applies to noise generated by any construction equipment on a permitted construction site, except for impact tools such as jackhammers (provided that they are equipped with acoustically attenuating shields or shrouds). For non-impact equipment, powered construction equipment is limited to a noise level of 80 dBA at a distance of 100 feet (equivalent to 86 dBA at a distance of 50 feet) from the equipment. Impact equipment is conditionally exempted from section 2907 of the noise ordinance.

- **Nighttime Construction Noise** is evaluated using section 2908 and 2909(d) of the police code. Section 2908 of the police code typically prohibits construction work between 8 p.m. and 7 a.m. that generates noise exceeding the ambient noise level by 5 dBA at the closest property line from the two loudest pieces of equipment,[82] unless a special permit is issued by the Director of the Department of Building Inspection or Director of Public Works.

  Section 2909(d) of the police code specifies the following interior noise limits for residential uses: 55 dBA between 7 a.m. and 10 p.m. and 45 dBA between 10 p.m. and 7 a.m. These interior limits are equivalent to a daytime exterior limit of 80 dBA and a nighttime exterior limit of 70 dBA and with the windows closed.

Federal Transit Administration

The planning department uses the Federal Transit Administration general assessment construction impact guidelines to analyze potential impacts resulting from the use of impact equipment such as pile drivers. The daytime residential criteria is 90 dBA L_{eq} and the nighttime criteria is 80 dBA L_{eq}.[83] The general assessment compares the two loudest pieces of equipment operating simultaneously at the same location using the criteria for residential uses, which are sensitive receptors. Commercial and industrial uses are not sensitive uses and are not considered in the analysis.

Ambient Noise Level Increases

Section 2901 of the noise ordinance defines ambient as "the lowest sound level repeating itself during a minimum ten-minute period as measured with a type 1 precision sound level meter, using slow response

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82 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018. The FTA methodology calls for estimating a combined noise level from simultaneous operation of the two noisiest pieces of equipment expected to be used in each construction phase. This method applies usage factors to each piece of equipment analyzed to account for the time that the equipment is in use over the specified time period.

83 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018.

and 'A' weighting." The duration over which ambient noise is measured can vary. An increase or decrease of 10 dB in sound pressure is perceived by an observer to be a doubling or halving of the sound.[84] The planning department considers an increase of 10 dBA L_{eq} over existing daytime ambient noise levels at the nearest sensitive receptor, using the Federal Transit Administration methodology, to be a substantial temporary increase in noise levels due to persistent construction noise.[85]

Construction

Construction of the proposed project would temporarily generate noise during periods of active construction. Noise levels associated with the construction equipment anticipated to be used during construction of the proposed project are listed in Table 6. Construction would generally occur Monday through Friday from 7 a.m. to 8 p.m.; however, approximately nine months of nighttime work would be required. Active construction would occur for a 27-month period starting in 2021, with various periods of inactivity each year.

Non-impact equipment operating between 7 a.m. and 8 p.m. would need to comply with the section 2907 requirement limiting noise levels to 80 dBA at a distance of 100 feet from the equipment. Noise attenuates at a rate of 6 dBA per doubling of distance; therefore, noise levels that exceed 86 dBA at 50 feet would exceed the noise limit established by section 2907. Pile driving and other impact equipment are exempt from the noise ordinance during daytime hours. As shown in Table 6, with the exception of the pile drivers (up to 101 dBA at 50 feet), no equipment would emit noise levels in excess of 86 dBA at 50 feet; therefore, daytime construction activities would comply with the noise ordinance. Further, in accordance with SFPUC Standard Construction Measure 5 (Noise), project-related construction activities would comply with the noise ordinance.

Identifying the associated noise level from each representative activity provides an understanding of the noise levels that are expected throughout the active construction period. The representative construction activities that would occur throughout the active construction period starting in 2021 are as follows:

- Installation of soil and sediment controls, which would occur approximately seven times for 1- to 3-day increments
- Installation of shoring and cofferdam, which would occur approximately 11 times for 1- to 3-week increments
- Dewatering of areas with shoring and cofferdams, which would occur multiple times for several-month increments
- Excavation of soils and sediment, which would occur multiple times for 1- to 3-week increments
- Installation of piles, which would occur multiples times for generally one-month increments

[84] Federal Highway Administration, *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, December 2011.
[85] San Francisco Planning Department, *Noise Impact Analysis Guidelines*, 2020.

- Backfilling of materials, which would occur approximately 13 times throughout the construction period for several days to 1-week increments

Many of these representative construction activities occur on the banks of Islais Creek as well as in-water, necessitating use of harbor craft.

TABLE 6. CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	L_{max} [1](dBA) at 50 Feet	Exceeds section 2907 Daytime Threshold (86 dBA L_{max} at 50 feet)?	L_{eq} (dBA) at 50 Feet
Construction Equipment			
Crane	81	No	73
Dump truck	76	No	73
Flat-bed truck	74	No	70
Forklift	79	No	75
Generator	81	No	78
Impact pile driver (hammer)	90 - 101 [2]	Exempt [3]	80 - 94
Loader	79	No	75
Pick-up truck	75	No	71
Pumps	81	No	78
Small backhoe	72	No	74
Vibratory pile driver (hammer) [3]	101	Exempt [3]	94
Watercraft			
Crane barge	85	No	80
Materials barge [4]	--	--	--
Small boat	85	No	77
Tugboat	82	No	77

Notes:

1. Lmax is the maximum noise level reached during a single noise event.
2. Different types of impact equipment generate different noise levels. Because the specific impact equipment used to install the piles have not yet been determined, a range of noise levels is presented to account for the variation. Representative examples of noise levels from pile driving equipment are used in this analysis to evaluate maximum (worst-case) noise impacts associated with pile installation.
3. As specified in section 2907(b) of Article 29, impact tools and equipment are exempt from the 86-dBA L_{max} at 50 feet ordinance limit, provided impact tools and equipment are equipped with intake and exhaust mufflers recommended by the manufacturers as best accomplishing maximum noise attenuation.
4. The materials barge does not have a generator or motor that could generate noise. The tugboat would move the materials barge as needed.

Sources:

California State Lands Commission, *Cabrillo Power I LLC Encina Marine Oil Terminal Decommissioning Project Mitigated Negative Declaration*, December 2015.

3M Personal Safety Division, Noise Navigator™ Sound Level Database with Over 1700 Measurement Values, August 22, 2016.

FHWA, *Construction Noise Handbook*, August 2006, *https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm*.

Various construction activities would overlap or occur concurrently throughout the duration of construction. Combined noise levels resulting from simultaneous operation of the two noisiest pieces of equipment were estimated for staging areas and several representative construction activities and are presented in Table 7**.** As indicated in Table 7, the maximum combined daytime noise levels at 50 feet during project construction would range from 78 dBA (L_{eq}) up to 97 dBA (L_{eq}). Other construction activities not specifically identified in Table 7 would occur but would use similar types of equipment. Because construction activities that require use of pile-driving equipment would be the loudest activities proposed, use of multiple pile drivers at the same time would emit the maximum combined noise levels generated by the proposed project. The potential concurrent use of multiple pile drivers may occur on various occasions throughout the construction duration, including for one-half-month period. Pile driving would generally occur between 7 a.m. and 3:30 p.m., except for one 2-week phase of construction on the northern bank where pile driving would occur adjacent to and within Third Street during nighttime hours in year 2. Table 7 compares estimated daytime combined noise levels at the closest residential receptor to the planning department and Federal Transit Administration noise thresholds for residential uses. Daytime construction activities would not exceed any threshold for residential uses at the nearest sensitive receptor. Nighttime noise impacts from pile driving are analyzed below.

Nighttime construction activities (between 8 p.m. and 7 a.m.) are expected to occur during dewatering phases and construction activities in and adjacent to Third Street. The proposed project is located in an industrial area where nighttime activity is generally low. San Francisco police code section 2908 prohibits nighttime construction work that generates noise exceeding the ambient noise level by 5 dBA (70 dBA[86]) at the closest property line. The SFPUC would comply with the substantive requirements of section 2908 of the police code. The adjacent properties are industrial and commercial uses, which do not operate at night. Nighttime construction activities could occur as close as 9 feet to the nearest property line. The loudest nighttime construction activities would result in noise levels of up to 109 dBA L_{eq}, if conducted at the closest work area, exceeding the section 2908 noise standard, and consequently necessitates further review to determine if this standard is exceeded at the nearest sensitive receptor. Table 8, p. 92, compares the estimated nighttime combined noise levels at the closest residential receptor to the Federal Transit Administration and San Francisco noise ordinance (section 2909[d]) interior or exterior noise thresholds for residential uses. Nighttime construction activities would not exceed any threshold for residential or other sensitive uses at the nearest sensitive receptor and would therefore comply with the substantive requirements of the police code. Construction of the proposed project would not generate noise in excess of the daytime or nighttime noise standards set in the San Francisco noise ordinance or set by the Federal Transit Administration. Construction-related noise impacts would therefore be less than significant.

[86] Ambient noise of 65 dBA plus 5 dBA.

TABLE 7. ESTIMATED COMBINED NOISE LEVELS FROM DAYTIME PROJECT CONSTRUCTION ACTIVITIES AT NEAREST RECEPTOR

Representative Activity	Equipment [1]	Combined Hourly L_{eq} (dBA) at 50 Feet [2]	Distance to Receptor (feet) [3]	Combined Noise Level L_{eq} (dBA) Adjusted for Distance [4]	Exceeds Threshold?	
					Federal Transit Administration Residential (90 dBA)	+10 Above Ambient Noise Level (75 dBA [5])
Installation of soil and sediment controls	Small Backhoe/Small Boat Loader	78 - 79	1,200	50 - 51	No	No
Installation of shoring and/or cofferdam	Pile Driver Loader/Crane Barge	94	1,200	66	No	No
Dewatering of areas with cofferdams	Pumps Generators	81	1,200	53	No	No
Excavation of soils and sediment	Generators Loader/Crane Barge	80 - 82	1,200	52 - 54	No	No
Installation of piles and pile bents	Pile Driver Generators/Crane Barge	94	1,200	66	No	No
Backfilling of materials	Forklift/Tugboat Small Backhoe/Crane Barge	78 - 82	1,200	51 - 54	No	No
Overlapping pile driving activities	Pile Driver Pile Driver	97	1,200	69	No	No
Staging areas	Forklift Generators	80	820	56	No	No

Notes:

1. Where two pieces of equipment are shown adjacent to each other (e.g., small backhoe/small boat), the representative activity could occur onshore as well as in-water and the equipment would differ accordingly.
2. The noise levels assume (1) no attenuation from intervening buildings/structures or the ground surface, and (2) unmitigated L_{eq} noise levels (reflecting usage factors) pursuant to Federal Transit Administration guidelines for assessing construction noise effects.
3. The representative construction activities could occur at numerous locations across the project site. The identified distance is the closest point at which the representative construction activity could occur.
4. Combined noise levels calculated using standard noise attenuation formulas.
5. A conservative threshold for daytime noise impacts at the nearest receptor would be 75 dBA (ambient noise of 65 dBA plus 10 dBA) to ensure the proposed project meets the San Francisco Planning Department standards.

Sources:

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018.

TABLE 8. ESTIMATED COMBINED NOISE LEVELS FROM NIGHTTIME PROJECT CONSTRUCTION ACTIVITIES AT NEAREST RECEPTOR

					Exceeds Threshold?	
Activity	Equipment	Combined Hourly L_{eq} (dBA) at 50 Feet 1	Distance to Receptor (feet)	Combined Noise Level L_{eq} (dBA) Adjusted for Distance	Federal Transit Administration Residential (80 dBA)	Section 2909(d) Residential (80/70 dBA Exterior; 55/45 dBA Interior 2)
Dewatering of areas with cofferdams	Pumps Generators	81	1,250	53	No	No
Installation of piles and pile bents	Pile Driver Generators	94	1,280	66	No	No
Staging areas	Forklift Generators	80	820	56	No	No

Notes:

1. The noise levels assume (1) no attenuation from intervening buildings/structures or the ground surface, and (2) unmitigated L_{eq} noise levels (reflecting usage factors) pursuant to Federal Transit Administration guidelines for assessing construction noise effects.
2. Section 2909(d) specifies residential interior limits of 55 dBA between 7:00 a.m. and 10:00 p.m., and 45 dBA between 10:00 p.m. and 7:00 a.m., which are equivalent to exterior limits of 80 dBA and 70 dBA, respectively, with the windows closed. Since nighttime construction activities are proposed between 8:00 p.m. and 11:00 p.m., the following ordinance interior noise limits are applied: 55 dBA with windows closed between 8:00 p.m. and 10:00 p.m. (equivalent to an exterior limit of 80 dBA) and 45 dBA with windows closed between 10:00 p.m. and 11:00 p.m. (equivalent to an exterior limit of 70 dBA).

Sources:

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018.

Operation

The proposed project would involve operation of the replacement pipelines and infrastructure associated with the SFPUC's existing wastewater system. No new permanent sources of ambient noise would be introduced into the environment. Maintenance activities would be conducted in a manner similar to existing conditions. No operation-related impacts would occur.

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

Vibration Levels

Groundborne vibration from construction activities such as pile driving (impact or vibratory) can produce detectable vibration at nearby buildings, infrastructure, and sensitive receptors. The main concerns associated with construction-generated vibration include sleep disturbance, building or utility damage, and interference with vibration-sensitive instruments or machinery, including instruments or machinery used in research laboratories or hospitals. The potential for construction activities to generate vibration affecting each of these receptor types are discussed below, following the discussion of vibration levels that may be generated during construction. Table 9 summarizes vibration levels generated by construction equipment proposed for use as part of the proposed project at various distances.

TABLE 9. CONSTRUCTION EQUIPMENT VIBRATION LEVELS AT VARIOUS DISTANCES (PPV)[1]

Equipment	5 Feet	10 Feet	15 Feet	25 Feet	50 Feet	75 Feet	100 Feet
Pile driver (impact hammer)[2]	7.200	2.546	1.386	0.644	0.228	0.124	0.081
Pile driver (vibratory driver)[2]	1.901	0.672	0.366	0.170	0.060	0.033	0.021
Small bulldozer	0.034	0.012	0.006	0.003	0.001	0.001	0.000

Notes:

1. Groundborne vibration levels vary based upon the substrate that underlies the site (soil, bedrock, etc.). Calculated using the following formula: PPV equip = PPVref x (Dref/D)1.5. The value of 1.5 is based upon competent soils: most sands, sandy clays, silty clays, gravel, silts, weathered rock. (can dig with shovel)
2. Reported ground vibration levels vary considerably due to many factors, including soil types, geology, method, pile type, pile size, and equipment size; the typical range for impact pile driver and vibratory pile driver are presented.

Sources:

Federal Transit Administration. *Transit Noise and Vibration Impact Assessment*. September 2018.

California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, September 2013.

Applicable Vibration Standards

Vibration effects are not addressed in the City and County of San Francisco regulations, nor are numerical thresholds provided for determining when groundborne vibration impacts are considered significant. Therefore, the analysis uses peak-particle velocity (PPV) thresholds from the California Department of Transportation to determine whether construction of the proposed project would result in vibration impacts (Table 10) were specifically selected based on project site conditions and adjacent land uses.

TABLE 10. VIBRATORY THRESHOLDS (PPV)

Source Character	Building Damage (Industrial/Commercial) [1, 3]	Building Damage (Older Residential/Historic) [1, 3]	Damage to Underground Utilities [1, 2]	Damage to Bridges [1]	Sleep Disturbance [1, 3]
Frequent Intermittent/ Continuous	0.5	0.25	4.0	0.5	0.1
Transient	2.0	0.5		1.2	0.9

Notes: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Sources:

1 Caltrans, *Transportation and Construction Vibration Guidance Manual*, September 2013.

2 AASHTO, *Evaluation of Transportation-Related Earthborne Vibrations*, Publication No. R 8-96. 2009. Based on studies by the American Association of State Highway and Transportation Officials (AASHTO), vibration measured at ground level is much greater than the vibration measured at the buried pipelines. As a result, surface vibration measurements overestimate the vibration levels present at buried utilities. At least one major utility has adopted a threshold of 4.0 inches/second (100 millimeters/second) PPV for underground optical-fiber cables. Furthermore, a restrained monolithic concrete block (such as a pipeline encased in concrete) can experience 10.0 inches/second PPV before cracking occurs. Therefore, buried utilities are more resistant to damage than even the strongest building structures and more relaxed criteria are appropriate.

3 San Francisco Planning Department, *Draft Noise Impact Analysis Guidelines*, 2020.

Construction

Structure Damage

Groundborne vibrations would be generated during construction activities due to pile driving and, the use of heavy equipment. Typical vibration levels for equipment that would be used during project construction are provided in Table 9, p. 93.[87] An impact hammer or pile driver would generate the highest level of groundborne vibration. Pile driving of steel piles and sheet piles would occur in the vicinity of existing infrastructure, such as the booster station and nearby industrial buildings, existing Southeast Outfall pipelines (42-inch ductile iron pipeline, emergency bypass pipeline, and 60-inch-diameter onshore pipeline) and the Islais Creek Bridge. Table 11 provides the distance at which the pile driving activity would attenuate below thresholds for various buildings and structures. Pile driving would produce vibration in excess of the 0.5 PPV threshold within 30 feet of the typical impact pile driving activity. Pile-driving activities for the proposed project would occur approximately 55 to 125 feet away from Islais Creek Bridge. Ground-borne vibrations would attenuate to less than 0.5 PPV at the distance from the pile driving activity to Islais Creek Bridge; therefore, impacts on Islais Creek Bridge are estimated to be below the damage threshold for bridges. No historic buildings or residences are located in proximity to the project site.

Modern industrial buildings located closer than 30 feet to impact pile driving have the potential to experience vibrations in excess of 0.5 PPV which may result in damage from pile driving activities (refer to Table 11). The closest non-SFPUC building to pile driving activities is an industrial warehouse (Metel Building) located approximately 38 feet away from pile installation and approximately 27 feet away from sheet pile installation. The closest pile installation would occur approximately 22 feet from the booster station. New sheet piles would be installed as close as approximately 15 feet from the booster station.

87 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018.

TABLE 11. ESTIMATED DISTANCE AT WHICH CONSTRUCTION EQUIPMENT VIBRATION LEVELS ARE BELOW THRESHOLDS

			Minimum Distance to Remain Below Thresholds (feet)				
Source Type	Source Character	PPV at 25 Feet (inches/second)	Building Damage (Industrial)	Building Damage (Older Residential/ Historic)	Damage to Underground Utilities	Damage to Bridges	Sleep Disturbance
Pile driver (impact hammer)[1]	Frequent Intermittent	0.644	30	48	8	30	90
Pile driver (vibratory driver)[1]	Frequent Intermittent	0.170	13	20	4	13	36
Small bulldozer	Frequent Intermittent	0.003	<1	2	<1	<1	3

Notes:

1. Reported ground vibration levels vary considerably due to many factors, including soil types, geology, method, pile type, pile size, and equipment size; the typical ranges for impact pile driver and vibratory pile driver are presented.

Source:

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, September 2018.

The vibration generated from pile installation could exceed the damage threshold for these structures because the structures are located within 30 feet of proposed pile driving. Proposed pile driving also would be located in proximity to critical pipeline infrastructure of the Southeast Outfall system. These underground utilities could be damaged if intermittent vibration levels exceed 4.0 PPV at the utility, which could occur if the utilities were within 8 feet of pile driving. Damage to the Southeast Outfall pipeline system could result in a release of treated effluent to Islais Creek, in violation of the southeast plant's NPDES permit. Thus, the vibration generated from pile installation has the potential to damage critical underground utilities, and nearby industrial buildings, potentially resulting in a significant impact.

The 60-inch-diameter piles and sheet piles closest to existing infrastructure on the shorelines would primarily be installed using pile rotation, pile oscillation, and/or vibratory driver, which would minimize the level of vibration caused by pile driving activities in these areas. Use of impact hammer would be minimized to the extent feasible. To further minimize potential impacts to nearby infrastructure and buildings, the SFPUC would install piles in predrilled holes to reduce vibratory impacts from pile drivers. The reduction in vibration associated with predrilling would vary depending on site conditions and may not be adequate to ensure that vibration does not damage underground utilities and the booster station. As described in Section A, Project Description, in accordance with the SFPUC Standard Construction Measure 1 (Seismic and Geotechnical), the proposed project includes settlement and vibration monitoring to reduce the potential for damage caused from earth settlement due to pile driving during construction. A settlement and vibration plan would identify site-specific vibration thresholds for potential damage to nearby buildings and structures, appropriate vibration monitoring locations and methods, and protective actions to be taken if triggered by vibration levels. As part of its construction contracts, SFPUC would also require contractors to repair damage caused by project construction to pre-construction conditions. With implementation of these project requirements, the impact of the proposed project on adjacent infrastructure and buildings from groundborne vibration would be less than significant.

Sleep Disturbance

No potential vibration-sensitive receptors (such as residences) that could be subject to sleep disturbance from nighttime construction activities, including pile driving, are located within the distance at which vibration levels would be above the threshold (i.e., up to 155 feet from pile driving) as identified in Table 11, p. 95. Nighttime pile driving would occur approximately 1,280 feet away from the closest sensitive receptor. Vibration levels from nighttime pile driving activities would be attenuated to 0.005 PPV at the nearest receptor and would not be perceptible to building occupants. No impact from nighttime construction-induced vibration on residents would occur.

Operation

The proposed project would not involve operation of equipment that would result in groundborne vibration. No operation-related impacts would occur.

Impact C-NO: The proposed project, in combination with cumulative projects in the vicinity, would not cause substantial cumulative noise and vibration impacts. (Less than Significant)

Cumulative construction-related noise increases would occur if any nearby cumulative projects are constructed at the same time as the proposed project and affect the same sensitive receptors as the proposed project. Noise contributions from past and present projects are reflected in ambient noise levels within the project vicinity. The geographic extent for the cumulative impact analysis for noise is limited to cumulative projects within 1,000 feet of the project site and staging areas because noise levels and vibration attenuate rapidly with distance.

Noise

A cumulative noise impact would occur if noise from multiple projects affected the same sensitive receptor. The closest sensitive receptor, a residential complex, is located at Cesar Chavez Street and Indiana Street. The cumulative projects in Table 3, p. 38 and shown in Figure 6, p. 37, that occur within 1,000 feet of the same receptor and are under construction at the same time as the proposed project have the potential to generate noise that may combine with the proposed project to create a significant cumulative noise impact. Cumulative projects that meet these criteria include the Caltrain Modernization Program, Islais Creek Bridge Rehabilitation Project, and Combined Sewer Discharge Condition Improvement and Backflow Prevention Project. The ambient noise levels at the nearest sensitive receptor are conservatively assumed to be 65 dBA L_{eq}[88] during the daytime and 60 dBA L_{eq}[89] during the nighttime.

Construction of the cumulative projects listed above would involve use of equipment and vehicles that would generate substantial noise. Noise levels from the construction activities of the cumulative projects in combination with the proposed project construction activities would be similar to or less than those identified in Table 7, p. 91 and Table 8, p. 92. Existing industrial infrastructure between the cumulative projects and the receptor would act as a noise barrier and would decrease noise levels at the receptor

88 San Francisco General Plan, Environmental Protection Element, Map 1, Background Noise Levels – 2009, *http://generalplan.sfplanning.org/images/I6.environmental/ENV_Map1_Background_Noise%20Levels.pdf*, accessed on April 10, 2018.

89 San Francisco Planning Department, *Southeast Plant Headworks Replacement Project Final MND*, December 19, 2016.

compared to the reported levels in Table 7, p. 91 and Table 8, p. 92. It is feasible that pile driving activities for the Islais Creek Bridge Rehabilitation Project could occur concurrently with the proposed project during the daytime and nighttime. For example, vibration levels associated with concurrent pile driving activities 1,200 feet away from a receptor would result in a cumulative noise level of 69 dBA (L_{eq}), which would not exceed the daytime or nighttime thresholds (refer to Table 7, p. 91 and Table 8, p. 92, for more information on thresholds). The exact locations of the pile driving for the Islais Creek Bridge Rehabilitation Project is not currently known but is assumed to be further than 1,200 feet away from the nearest receptor because of the location of the existing bridge. Other cumulative projects would cumulatively increase noise levels but due to the distances between the locations of these projects and the project site, the increase would be less than the cumulative noise increase associated with concurrent construction of the Islais Creek Bridge Rehabilitation Project and the proposed project. As such, the potential maximum cumulative noise increases from construction of the proposed project in combination with cumulative projects would not exceed thresholds at the nearest receptor and cumulative noise impacts would be less than significant.

Vibration

A cumulative vibration impact would occur when vibration from cumulative projects combine to exceed the thresholds in Table 10, p. 93, at the same infrastructure or sensitive receptor. Adjacent cumulative projects, particularly the Public Works Islais Creek Bridge Rehabilitation Project, would involve the use of pile driving and other vibratory equipment during construction. Pile driving for the Islais Creek Bridge Rehabilitation Project could occur simultaneously with the proposed project. Underground utilities and other infrastructure could be disturbed or damaged by cumulative vibrations. A quantitative vibratory analysis cannot be conducted to determine the cumulative effect on adjacent structures because detailed construction information is not available for the Islais Creek Bridge Rehabilitation Project. In the absence of project-specific information, it is assumed that the construction activities associated with the Islais Creek Bridge Rehabilitation Project and proposed project could damage adjacent structures. The proposed project, in combination with the Islais Creek Bridge Rehabilitation Project, could have a potentially significant cumulative impact on underground utilities and the Islais Creek Bridge related to vibration. As previously discussed, the SFPUC would implement a settlement and vibration monitoring plan as part of the proposed project to reduce the potential for pile driving activities associated with the proposed project to damage to adjacent structures and to repair damage that may occur. The settlement and vibration plan would identify site-specific vibration thresholds for potential damage to nearby buildings and structures, appropriate vibration monitoring locations and methods, and actions to be taken if triggered by vibration levels. Furthermore, as part of its construction contracts, SFPUC would require contractors to repair damage caused by project construction to pre-construction conditions. As such, the proposed project's contribution to cumulative vibration impacts would be less than cumulatively considerable.

E.8. AIR QUALITY

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
8.	**AIR QUALITY—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, state, or regional 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?	☐	☐	☒	☐	☐

Setting

Air Basins

The Bay Area Air Quality Management District (Bay Area air district) is the regional agency with jurisdiction over the nine-county San Francisco Bay Area Air Basin (air basin), which includes San Francisco, Alameda, Contra Costa, Marin, San Mateo, Santa Clara, and Napa Counties and portions of Sonoma and Solano Counties. The Bay Area air district is responsible for attaining and maintaining air quality in the air basin within federal and state air quality standards, as established by the Federal Clean Air Act and the California Clean Air Act, respectively. Specifically, the Bay Area air district has the responsibility to monitor ambient air pollutant levels throughout the air basin and develop and implement strategies to attain the applicable federal and state standards. The state and federal Clean Air Acts require plans to be developed for areas that do not meet air quality standards.

The most recent air quality plan, the 2017 Clean Air Plan[90], was adopted by the Bay Area air district on April 19, 2017. The 2017 Clean Air Plan updates the most recent ozone plan, the 2010 Clean Air Plan, in accordance with the requirements of the California Clean Air Act to implement all feasible measures to reduce ozone; provide a control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases in a single, integrated plan; and establish emission control measures to be adopted or implemented. The 2017 Clean Air Plan contains the following primary goals:

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

90 Bay Area Air Quality Management District, *2017 Clean Air Plan*, April 19, 2017

The 2017 Clean Air Plan represents the most current applicable air quality plan for the air basin. Consistency with this plan is the basis for determining whether the proposed project would conflict with or obstruct implementation of air quality plans.

Criteria Air Pollutants

In accordance with the state and federal Clean Air Acts, air pollutant standards are identified for the following six criteria air pollutants: ozone, carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. These air pollutants are termed criteria air pollutants because they are regulated by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. The state and federal air quality standards were developed to protect public health and welfare. Exposure to these criteria air pollutants, even for a short-term period, may increase the risk of health effects.

In general, the air basin experiences low concentrations of most pollutants when compared to federal or state standards. The air basin is designated as either in *attainment*[91] or unclassified for most criteria pollutants with the exception of ozone, $PM_{2.5}$, and PM_{10}, for which the basin is designated as non-attainment for the state and/or federal standards. By its very nature, regional air pollution is largely a cumulative impact in that no single project is sufficient in size to result in non-attainment of air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality impacts. If a project's contribution to cumulative air quality impacts is considerable, the project's impact on air quality would be considered significant.[92]

Projects may contribute to regional criteria air pollutants during the construction and operational phases of a project.

Table 12, which identifies the air quality significance thresholds for the air basin, is followed by a discussion of each threshold. Projects that would result in criteria air pollutant emissions below these significance thresholds would not violate an air quality standard, contribute substantially to an air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants within the air basin.

91 "Attainment" status refers to those regions that are meeting federal and/or state standards for a specified criteria pollutant. "Non-attainment" refers to regions that do not meet federal and/or state standards for a specified criteria pollutant. "Unclassified" refers to regions where there is not enough data to determine the region's attainment status.

92 Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, May 2017.

TABLE 12. CRITERIA AIR POLLUTANT SIGNIFICANCE THRESHOLDS FOR THE SAN FRANCISCO BAY AREA AIR BASIN

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (pounds/day)	Average Daily Emissions (pounds/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NOx	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	

Source:
Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, May 2017.

Ozone Precursors. As previously discussed, the air basin is currently designated as non-attainment areas for ozone and particulate matter. Ozone is a secondary air pollutant that is produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NOx). Ozone can cause respiratory problems (e.g., chest pain, coughing, throat irritation) and exacerbate existing respiratory problems, such as asthma and bronchitis.[93]

The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants that may contribute to an existing or projected air quality violation is based on the state and federal emissions limits under the state and federal Clean Air Acts, respectively, for stationary sources. To ensure that new stationary emission sources do not cause or contribute to a violation of an air quality standard, air district regulations (regulation 2, rule 2 for the Bay Area air district) require any new source that emits criteria air pollutants above a specified emissions limit to offset those emissions from the ozone precursors ROG and NOx. These offsets reduce emissions to levels at which new sources are not anticipated to contribute to an air quality violation, leading to potential health effects, or result in a considerable net increase in criteria air pollutants.

Although this regulation applies to new or modified stationary sources, projects, such as the proposed project, result in ROG and NO_x emissions as a result of increases in vehicle trips, architectural coating and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of projects and those projects that result in emissions below these thresholds would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in ROG and NOx emissions. Due to the temporary nature of construction activities, only the average daily thresholds for emissions occurring in the air basin are applicable to construction phase emissions.

Particulate Matter (PM_{10} and $PM_{2.5}$)[94]. PM_{10} particles are a threat to health because they can enter the lungs and are small enough that the respiratory system cannot naturally filter them out. PM_{10} can exacerbate

93 U.S. EPA, *Criteria Air Pollutants.* 2018, *https://www.epa.gov/criteria-air-pollutants,* accessed March 8, 2019.

94 PM_{10} is often termed "coarse" particulate matter and is made of particulates that are 10 microns in diameter or smaller. $PM_{2.5}$, termed "fine" particulate matter, is composed of particles that are 2.5 microns or less in diameter.

asthma and bronchitis and potentially contribute to premature death. $PM_{2.5}$ is considered more hazardous to human health than PM_{10} because it can contain a larger variety of dangerous components than PM_{10} and can travel farther into the lungs, potentially causing scarring of lung tissue and reduced lung capacity.[95]

The air district has established thresholds of significance for PM_{10} and $PM_{2.5}$ based on the emissions limit in the federal New Source Review for stationary sources in non-attainment areas. The emission limits identified in Table 12, p.100, represent levels at which a source is not expected to have an impact on the region's air quality.[96,] Similar to ozone precursor thresholds identified above, projects typically result in particulate matter emissions as a result of increases in vehicle trips, space heating and natural gas combustion, landscape maintenance, and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of a project. Again, because construction activities are temporary in nature, only the average daily thresholds are applicable to construction-phase emissions occurring in the air basin.

Fugitive Dust. Fugitive dust emissions, composed primarily of PM_{10}, are typically generated during construction phases. Studies have shown that the application of best management practices at construction sites significantly controls fugitive dust[97], and individual measures have been shown to reduce fugitive dust from 30 to 90 percent[98]. The Bay Area air district has identified a number of best management practices to control fugitive dust emissions from construction activities.[99] The city's Construction Dust Control Ordinance (ordinance 176-08, effective July 30, 2008) requires a number of measures to control fugitive dust, and the best management practices employed in compliance with the Construction Dust Control Ordinance are an effective strategy for controlling construction-related fugitive dust.

Other Criteria Pollutants. Regional concentrations of CO in the air basin have not exceeded the state standards in the past 11 years, and SO_2 concentrations have never exceeded the standards. The primary source of CO emissions from development projects is vehicle traffic. Construction-related SO_2 emissions represent a negligible portion of total basin-wide emissions, and construction-related CO emissions represent less than 5 percent of total basin-wide CO emissions in the air basin. As discussed previously, the air basin is in attainment for both CO and SO_2. Furthermore, the Bay Area air district has demonstrated, based on modeling, that in order to exceed the California ambient air quality standard of 9.0 parts per million (ppm) (eight-hour average) or 20.0 ppm (one-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited). Emissions of CO and SOx are quantified.

95 U.S. EPA, *Criteria Air Pollutants,* 2018, *https://www.epa.gov/criteria-air-pollutants*, accessed March 8, 2019.

96 Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, page 2-2, May 2017.

97 Western Regional Air Partnership, *WRAP Fugitive Dust Handbook*, 2006, *http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf*, accessed May 5, 2016.

98 Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, page D-47, May 2017.

99 Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, May 2017.

Toxic Air Contaminants

In addition to criteria air pollutants, individual projects may emit toxic air contaminants (TACs). TACs collectively refer to a diverse group of air pollutants that are capable of causing chronic (i.e., of long duration) and acute (i.e., severe but short-term) adverse effects on human health, including carcinogenic effects. The human health effects of TACs include birth defects, neurological damage, cancer, and mortality. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

Unlike criteria air pollutants, TACs do not have ambient air quality standards but rather are regulated by the air districts using a risk-based approach to determine which sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis that evaluates human health exposure to toxic substances; this assessment, considered together with information regarding the toxic potency of the particular substances, yields quantitative estimates of health risks.[100]

Air pollution does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Land uses such as residences, schools, children's daycare centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress or, as in the case of residential receptors, their exposure time is greater than that for other land uses. Therefore, these groups are referred to as sensitive receptors. Exposure assessment guidance typically assumes that residences would be exposed to air pollution 24 hours per day, seven days per week, for 30 years.[101] Therefore, assessments of air pollutant exposure to residents typically result in the greatest adverse health outcomes of all population groups.

Exposures to fine particulate matter ($PM_{2.5}$) are strongly associated with mortality, respiratory diseases, and impaired lung development in children as well as hospitalization for cardiopulmonary disease.[102] In addition to $PM_{2.5}$, diesel particulate matter is also of concern. The California Air Resources Board (California air board) identified diesel particulate matter as a TAC in 1998. This was based primarily on evidence that demonstrated cancer effects in humans.[103] The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC that is routinely measured in the region.

In an effort to identify areas of San Francisco most adversely affected by sources of TACs, San Francisco partnered with the Bay Area air district to conduct a citywide health risk assessment based on an inventory and assessment of air pollution and exposures from mobile, stationary, and area sources within San

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

101 California Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spot Program Risk Assessment Guidelines*, pages 4-44, 8-6, February 2015.

102 San Francisco Department of Public Health, Assess*ment and Mitigation of Air Pollutant Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Revie*w, May 2008.

103 California Air Resources Board, Fact Sheet, *The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines*, October 1998.

Francisco. Areas with poor air quality, termed the "Air Pollutant Exposure Zone," were identified based on health protective criteria that considers estimated cancer risk, exposures to fine particulate matter, proximity to freeways, and locations with particularly vulnerable populations. The project site is located within the Air Pollutant Exposure Zone. Each of the Air Pollutant Exposure Zone criteria is discussed below.

Excess Cancer Risk. The Air Pollution Exposure Zone includes areas where modeled cancer risk exceeds 100 incidents per one million persons exposed. This criterion is based on U.S. Environmental Protection Agency (U.S. EPA) guidance for conducting air toxic analyses and making risk management decisions at the facility and community-scale level.[104] As described by the Bay Area air district, the U.S. EPA considers a cancer risk of 100 per million to be within the "acceptable" range of cancer risk. Furthermore, in the 1989 preamble to the benzene National Emissions Standards for Hazardous Air Pollutants rulemaking,[105] the U.S. EPA states that it "…strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million and (2) limiting to no higher than approximately one in ten thousand [100 in one million] the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years." The 100 per one million excess cancer cases is also consistent with the ambient cancer risk in the most pristine portions of the air basin based on Bay Area air district regional modeling.[106]

Fine Particulate Matter ($PM_{2.5}$). In April 2011, the U.S. EPA published *Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards*, "Particulate Matter Policy Assessment." In this document, U.S. EPA staff concludes that the then current federal annual $PM_{2.5}$ standard of 15 micrograms per cubic meter ($\mu g/m^3$) should be revised to a level within the range of 13 to 11 $\mu g/m^3$, with evidence strongly supporting a standard within the range of 12 to 11 $\mu g/m^3$. The Air Pollutant Exposure Zone for San Francisco is based on the health protective $PM_{2.5}$ standard of 11 $\mu g/m^3$, as supported by the U.S. EPA's Particulate Matter Policy Assessment, although lowered to 10 $\mu g/m^3$ to account for uncertainty in accurately predicting air pollutant concentrations using emissions modeling programs.

Proximity to Freeways. According to the California air board, studies have shown an association between the proximity of sensitive land uses to freeways and a variety of respiratory symptoms, asthma exacerbations, and decreases in lung function in children. Siting sensitive uses in close proximity to freeways increases both the exposure to air pollution and the potential for adverse health effects. Evidence shows that sensitive uses located within a 500-foot buffer of any freeway are at an increased health risk from air pollution;[107] as such, parcels that are within 500 feet of freeways are included in the Air Pollutant Exposure Zone.

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104 Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, page D-35, May 2017.

105 54 Federal Register 38044, September 14, 1989.

106 Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, page D-43, May 2017.

107 California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005, *https://www.arb.ca.gov/ch/handbook.pdf*, accessed October 7, 2019.

Health Vulnerable Locations

Based on the Bay Area air district's evaluation of health vulnerability in the Bay Area, those ZIP codes in the worst quintile of the Bay Area health vulnerability scores as a result of air pollution-related causes were afforded additional protection by lowering the standards for identifying parcels in the Air Pollutant Exposure Zone to: (1) an excess cancer risk greater than 90 per one million persons exposed, and/or (2) $PM_{2.5}$ concentrations in excess of 9 $\mu g/m^3$.[108]

The above citywide health risk modeling was also used as the basis in approving amendments to the San Francisco Environment and Administrative Codes, referred to as the Clean Construction Ordinance, or Environment Code section 25 (ordinance 28-15, effective April 19, 2015). The purpose of the Clean Construction Ordinance is to protect the public health, safety and welfare by requiring contractors on city public works projects to reduce diesel and other fine particulate emissions generated by construction activities.

Air Quality Impacts

Project-related air quality impacts fall into two categories: short-term impacts from construction and long-term impacts from project operation.

Impact AQ-1: The proposed project would not conflict with or obstruct implementation of the applicable air quality plan. (Less than Significant)

Construction

The most recently adopted air quality plan for the air basin is the 2017 Clean Air Plan. The 2017 Clean Air Plan is a road map that demonstrates how the air basin will achieve compliance with the state ozone standards as expeditiously as practicable and how the region will reduce the transport of ozone and ozone precursors to neighboring air basins. In determining consistency with the 2017 Clean Air Plan, this analysis considers whether the project would: (1) support the primary goals of the 2017 Clean Air Plan, (2) include applicable control measures from the 2017 Clean Air Plan, and (3) avoid disrupting or hindering implementation of control measures identified in the 2017 Clean Air Plan.

As previously discussed, the primary goals of the 2017 Clean Air Plan are to: (1) Protect air quality and health at the regional and local scale; (2) eliminate disparities among Bay Area communities in cancer health risk from toxic air contaminants; and (3) protect the climate by reducing greenhouse gas emissions. To meet the primary goals, the 2017 Clean Air Plan recommends specific control measures and actions. These control measures are grouped into various categories that include stationary and area source measures, mobile source measures, transportation control measures, land use measures, and energy and climate measures. To this end, the 2017 Clean Air Plan includes 85 control measures aimed at reducing air pollution in the air basin.

The measures most applicable to the proposed project are transportation control measures and energy and climate control measures. The proposed project's impact with respect to GHGs are discussed in Section E.9,

[108] San Francisco Planning Department, Property Information Map, Air Pollutant Exposure Zone (2020), Available: https://sfplanninggis.org/pim, accessed on May 15, 2020.

Greenhouse Gas Emissions, which demonstrates that the proposed project would comply with the applicable provisions of the city's Greenhouse Gas Reduction Strategy.

Examples of a project that could cause the disruption or delay of 2017 Clean Air Plan control measures are projects that would preclude the extension of a transit line or bike path, or projects that propose excessive parking beyond parking requirements. Construction of the proposed project would not preclude the extension of a transit line or a bike path or any other transit improvement nor would it alter the use of surrounding areas. As such, construction of the proposed project would not disrupt or hinder implementation of control measures identified in the 2017 Clean Air Plan.

Construction crew members would commute to and from the project site and heavy equipment and harbor craft would be used during construction of the proposed project. The 2017 Clean Air Plan includes several transportation control measures applicable to these activities, including:

- Provide incentives to promote ridesharing (TR8)
- Incentives to purchase new trucks that exceed NOx emission standards, hybrid trucks, or zero-emission trucks (TR19)
- Assisting commercial harbor craft fleets to achieve early compliance with harbor craft air toxic control measure and supporting research efforts to develop and deploy more efficient engines and cleaner, renewable fuels for harbor craft (TR21)
- Deploy construction and farm equipment with Tier 3 or 4 off-road engines (TR22)

The applicable transportation control measures are voluntary incentive measures and do not require vehicle upgrades or retrofits. The proposed use of vehicles and equipment would not conflict with these programs and in fact the proposed project would be required to comply with the city's Clean Construction Ordinance, which requires city projects within the Air Pollutant Exposure Zone to include cleaner construction equipment. Therefore, the proposed project would not conflict with or obstruct implementation of the control measures identified to achieve the goals of the 2017 Clean Air Plan.

Operation of vehicles and equipment during proposed project construction would emit diesel particulate matter and criteria air pollutants. Construction activities, particularly during site preparation, would also temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. As further discussed under Impact AQ-2, no exceedances of the criteria air pollutant significance thresholds would occur, and the proposed project would comply with the requirements of the Clean Construction and Dust Control Ordinances. Therefore, no conflict would occur from exceedance of the criteria air pollutant significance thresholds and the proposed project would support the primary goals set forth in the 2017 Clean Air Plan.

For the reasons described above, the proposed project would not interfere with implementation of the 2017 Clean Air Plan, and because the proposed project would be consistent with the applicable air quality plan that demonstrates how the region will improve ambient air quality and achieve the state and federal ambient air quality standards, this impact would be less than significant.

Operation

The proposed project would involve replacement or upgrade of effluent pipelines and infrastructure associated with the SFPUC's existing system. No new operational sources of emissions would be generated, and maintenance activities would be conducted in a manner similar to existing conditions. As such, operation of the proposed project would not result in an increase in automobile trips, vehicle miles traveled, or air pollutant emissions. No operation-related impacts would occur.

Impact AQ-2: The proposed project would generate fugitive dust and criteria air pollutants, but would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants. (Less than Significant)

Construction

Overview

Construction activities (short term) typically result in emissions of ozone precursors and particulate matter in the form of dust (fugitive dust) and exhaust (e.g., vehicle tailpipe emissions). Emissions of ozone precursors and particulate matter are primarily a result of the combustion of fuel from on-road and off-road sources. However, ROGs are also emitted from activities that involve painting, other types of architectural coatings, or asphalt paving. The proposed project would involve installation of two new high-density polyethylene and steel pipelines adjacent to and beneath Islais Creek to replace two existing ductile iron wastewater pipelines that have reached the end of their useful lives. Pipeline installation within Islais Creek would involve installation of watertight cofferdams around the work areas, dewatering of the cofferdam, and excavation of a trench for placement of the pipelines below the creek bed. In addition to installation of the permanent new pipelines, the proposed project would include removal of a temporary bypass pipeline (installed as a separate, emergency project) and installation of valves and other appurtenances within two vault structures, each of which would be located along the northern and southern banks of the creek. During the 27-month active construction period, construction activities would have the potential to result in emissions of ozone precursors and particulate matter, as discussed below.

Fugitive Dust

Construction activities would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the proposed project site during excavation and construction, and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site could deposit dust or mud on local streets, which could be an additional source of airborne dust after it dries. Fugitive dust emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. Fugitive dust emissions would also depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Depending on exposure, adverse health effects can occur due to this particulate matter in general and also due to specific contaminants such as lead or asbestos that may be constituents of soil. Although there are federal standards for air pollutants and implementation of state and regional air quality control plans, air

pollutants continue to have impacts on human health throughout the country. California has found that particulate matter exposure can cause health effects at lower levels than national standards. The current health burden of particulate matter demands that, where possible, public agencies take feasible available actions to reduce sources of particulate matter exposure. According to the California air board, reducing $PM_{2.5}$ concentrations to state and federal standards of 12 $\mu g/m^3$ in the San Francisco Bay Area would prevent between 200 and 1,300 premature deaths.[109]

In response, the San Francisco Board of Supervisors approved the Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008) with the intent of reducing the quantity of dust generated during site preparation and demolition and construction work in order to protect the health of the general public and of onsite workers, minimize public nuisance complaints, and to avoid orders to stop work by the Department of Building Inspection.

The Construction Dust Control Ordinance requires that all site preparation work, demolition, or other construction activities within San Francisco that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from the Department of Building Inspection. The Director of the Department of Building Inspection may waive this requirement for activities on sites less than 0.5 acre that are unlikely to result in any visible wind-blown dust.

The SFPUC would be required to comply with the Construction Dust Control Ordinance. Under this ordinance, the SFPUC and its contractor responsible for construction activities at the project site would be required to use the following practices to control construction dust on the site or other practices that result in equivalent dust control that are acceptable to the director. Dust suppression activities may include watering all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. During excavation and dirt-moving activities, contractors shall wet sweep or vacuum the streets, sidewalks, paths, and intersections where work is in progress at the end of the workday. Inactive stockpiles (where no disturbance occurs for more than seven days) greater than 10 cubic yards or 500 square feet of excavated material, backfill material, import material, gravel, sand, road base, and soil shall be covered with a 10 mil (0.01 inch) polyethylene plastic (or equivalent) tarp, braced down, or use other equivalent soil stabilization techniques. San Francisco ordinance 175-91 restricts the use of potable water for soil compaction and dust control activities undertaken in conjunction with any construction or demolition project occurring within the boundaries of San Francisco, unless permission is obtained from the San Francisco Public Utilities Commission. Non-potable water must be used for soil compaction and dust control activities during project construction and demolition. The SFPUC operates a recycled water truck-fill station at the Southeast Water Pollution Control Plant that provides recycled water for these activities at no charge. Compliance with the regulations and procedures set forth by the Dust Control Ordinance would ensure that potential dust-related air quality impacts would be less than significant.

[109] California Air Resources Board, *Methodology for Estimating Premature Deaths Associated with Long-term Exposure to Fine Airborne Particulate Matter in California.* Staff report. Table 4c, October 24, 2008.

Criteria Air Pollutants

As discussed above, construction activities would result in emissions of criteria air pollutants from the use of off- and on-road vehicles and equipment. Construction-related criteria air pollutants generated by the proposed project were quantified for off-road equipment, harbor craft, haul truck trips, worker vehicle trips, paving activities, and earth-moving activities. Project-related construction emissions from the project's off-road and on-road sources were calculated using the California Emissions Estimator Model (CalEEMod Version 2016.3.2) and emission factors from the 2017 version of the EMission FACtor model (EMFAC 2017), respectively.[110,111] Harbor craft emissions were calculated using methodology consistent with the air board Commercial Harbor Craft Emission Inventory, Barge and Dredge Emission Inventory, 2012 Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, and Updates on the Emissions Inventory for Commercial Harbor Craft Operating in California.[112,113,114] Specific details on assumptions and how emission calculations were conducted are available in the Air Quality Technical Report.[115]

For projects located within the Air Pollutant Exposure Zone, the Clean Construction Ordinance requires equipment to meet or exceed Tier 2 standards for off-road engines and operate with the most effective California air board *verified diesel emission control strategy*. Because the project site is located within the Air Pollutant Exposure Zone, the air quality modeling conducted for the proposed project assumed compliance with the Clean Construction Ordinance. Tier 4 engines also satisfy the Clean Construction Ordinance requirements for Tier 2 engines and level 3 or higher verified diesel emission control strategy .[116] Because equipment with Tier 4 engines currently are more readily available than equipment with Tier 2 engines and level 3 verified diesel emission control strategy, emission calculations assumed that all off-road, land-based equipment (e.g., cranes, loaders, backhoes, etc.) would be outfitted with Tier 4 engines as part of the proposed project's compliance with the Clean Construction Ordinance.

The proposed project would involve approximately 27 months of active construction over an approximately 40-month period, with construction activity occurring 5 days a week. Emissions were converted from tons/year to pounds/day using the estimated active construction duration for each year of construction. As shown in Table 13, unmitigated project construction emissions would not exceed any threshold of significance for criteria air pollutants. The proposed project would not result in a cumulatively considerable net increase for any pollutant that is in nonattainment, thus resulting in a less-than-significant impact.

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110 California Air Resources Board, *EMFAC2014 Web Database (v1.0.7),* December 14, 2015, *https://www.arb.ca.gov/emfac/2014/*.

111 California Air Pollution Control Officers Association, *California Emissions Estimator Model (CalEEMod Version 2016.3.2),* 2017, *http://www.caleemod.com/*.

112 California Air Resources Board, *Updates on the Emissions Inventory for Commercial Harbor Craft,* 2010.

113 California Air Resources Board, *Commercial Harbor Craft Emission Inventory*, October 17, 2011.

114 California Air Resources Board, *Emissions Estimation Methodology for Commercial Harbor Craft Operating in California,* 2012.

115 Panorama Environmental, Southeast Bay Outfall Islais Creek Crossing Replacement Project Air Quality Technical Report, 2019.

116 City and County of San Francisco, *San Francisco Clean Construction Ordinance,* March 2015.

TABLE 13. UNMITIGATED AVERAGE DAILY CONSTRUCTION EMISSIONS IN THE SAN FRANCISCO AIR BASIN (POUNDS PER DAY)

Year	Active Construction Days	ROG	NOx	PM_{10}	$PM_{2.5}$
Year 1	116	2.6	20.0	0.6	0.5
Year 2	220	4.9	44.4	1.0	1.0
Year 3	238	5.0	49.0	1.0	1.0
Year 4	17	0.1	0.1	0.0	0.0
Significance Threshold		54	54	82 (exhaust only)	54 (exhaust only)
Threshold Exceeded?		No	No	No	No

Notes: This analysis assumes compliance with the Clean Construction Ordinance, as discussed in the text above. For the purposes of the calculations, Year 1 through Year 4 was assumed to occur in 2020 through 2023. Emission rates from equipment and vehicles may be lower in later years.

The SFPUC may either install the tapping tee in Tulare Park or isolate the 60-inch onshore pipeline at Pier 80. This calculation analyzes the tapping tee option, which would require more equipment and emission-generating activities. The Year 3 emissions would be slightly lower if the Pier 80 outfall structure option is implemented.

These emissions results were conservatively modeled assuming installation of approximately 30 percent more piles of more widely varying diameter than the proposed project. Actual emissions generated by the proposed project is expected to be less than those presented.

Sources:

Panorama Environmental, Southeast Bay Outfall Islais Creek Crossing Replacement Project Air Quality Technical Report, 2019.

Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, May 2017.

Operation

No new operational sources of emissions would be generated, and maintenance activities would be conducted in a manner similar to existing conditions. No operation-related impacts would occur.

Impact AQ-3: The proposed project's construction activities would generate toxic air contaminants, including diesel particulate matter, but would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

Construction

Toxic Air Contaminants

The proposed project site and nearest sensitive receptor are located within the Air Pollutant Exposure Zone as described above, meaning the area has high levels of background pollutant concentrations.[117] The nearest sensitive receptor is a five-story multi-unit structure located at the corner of Cesar Chavez Street and Indiana Street, approximately 1,200 feet northwest of the project site and approximately 820 feet from the nearest construction staging area on Tennessee Street.

Off-road equipment (which includes construction-related equipment), tugs, and other marine vessels are large contributors to diesel particulate matter emissions in California, although since 2007, the California air board has found the emissions to be substantially lower than previously expected.[118] According to the

117 San Francisco Department of Public Health, Air Pollutant Exposure Zone Map, April 10, 2014.

118 California Air Resources Board, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed Amendments to the Regulation for In-Use Off-Road Diesel-Fueled Fleets and the Off-Road Large Spark-Ignition Fleet Requirements*, October 2010.

California air board, off-road equipment, which includes construction equipment, is the third largest source of mobile particulate matter emissions in California.[119]

Additionally, a number of federal and state regulations are requiring cleaner off-road equipment. Specifically, both the U.S. EPA and California air board have set emissions standards for new off-road equipment engines, ranging from Tier 1 to Tier 4. Tier 1 emission standards were phased in between 1996 and 2000 and Tier 4 interim and final emission standards for all new engines were phased in between 2008 and 2015. To meet the Tier 4 emission standards, engine manufacturers will be required to produce new engines with advanced emission-control technologies. Although the full benefits of these regulations will not be realized for several years, the U.S. EPA estimates that by implementing the federal Tier 4 standards, NOx and particulate matter emissions will be reduced by more than 90 percent.[120]

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

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

Project-level analyses of construction activities have a tendency to produce overestimated assessments of long-term health risks; however, within the Air Pollutant Exposure Zone, as discussed above, additional construction activity may adversely affect populations that are already at a higher risk for adverse long-term health risks from existing sources of air pollution. Therefore, a health risk assessment was performed to evaluate potential health risks at the closest sensitive receptor location.

Project construction activities would result in short-term emissions of diesel particulate matter and other TACs. As previously discussed under Impact AQ-2, the proposed project must comply with the Clean Construction Ordinance, which requires the use of Tier 2 or higher engines with the most effective verified diesel emission control strategy (Tier 4 engines automatically meet this requirement). The Clean Construction Ordinance also prohibits use of portable diesel engines (in most cases), restricts equipment idling to two minutes, and requires contractors to properly maintain and tune their equipment in accordance with manufacturer specifications. In addition, the ordinance requires the preparation and implementation of a Construction Emissions Minimization Plan and the monitoring of construction equipment use from the start of construction. While emission reductions from limiting idling, educating workers and the public and properly maintaining equipment are difficult to quantify, other measures in

[119] California Air Resources Board, *2012 Base Year Emissions, Off-Road Sources*, 2017, *https://ww3.arb.ca.gov/ei/emissiondata.htm*.

[120] U.S. EPA, "Clean Air Nonroad Diesel Rule: Fact Sheet," May 2004.

the Clean Construction Ordinance, specifically the requirement for equipment with Tier 2 engines and Level 3 verified diesel emission control strategy can reduce construction emissions by 89 to 94 percent compared to equipment with engines meeting no emission standards and without a verified diesel emission control strategy .[121] Emissions reductions from the combination of Tier 2 equipment with level 3 verified diesel emission control strategy is almost equivalent to requiring only equipment with Tier 4 engines. As noted in Section A, Project Description, the project would use Tier 4 engines for land-based equipment.

A health risk assessment was performed to evaluate potential health risks at the closest sensitive receptor location. The proposed project's health risk assessment was conducted using the construction emissions inventory (see Table 14) and the U.S. EPA's American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion model[122] and the California air board's Hotspots Analysis and Reporting Program (HARP) model. Modeling inputs, including source characteristics (e.g., release height, initial dispersion), were based on published guidance from U.S. EPA, the Bay Area air district,[123,124] Office of Environmental Health Hazard Assessment,[125] and the California Air Pollution Control Officer's Association.[126] Meteorological data from San Francisco International Airport, which is the nearest meteorological air monitoring site, was used. The health risk assessment assessed potential excess lifetime cancer risks and $PM_{2.5}$ concentrations, and chronic and acute non-cancer health effects resulting from project construction. Risks were quantified at the closest residential receptor location, which is at the corner of Cesar Chavez Street and Indiana Street. Additional details on assumptions and analysis methods for the health risk assessment are available in the Air Quality Technical Report.[127]

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121 PM emissions benefits are estimated by comparing off-road PM emission standards for Tier 2 with Tier 1 and 0. Tier 0 off-road engines do not have PM emission standards, but the U.S. EPA's Exhaust and Crankcase Emissions Factors for Nonroad Engine Modeling – Compression Ignition has estimated Tier 0 engines between 50 horsepower (hp) and 100 hp to have a PM emission factor of 0.72 grams per horsepower hour (g/hp-hr) and greater than 100 hp to have a PM emission factor of 0.40 g/hp-hr. Therefore, requiring off-road equipment to have at least a Tier 2 engine would result in between a 25 percent and 63 percent reduction in PM emissions, as compared to off-road equipment with Tier 0 or Tier 1 engines. The 25 percent reduction comes from comparing the PM emission standards for off-road engines between 25 hp and 50 hp for Tier 2 (0.45 grams per brake horsepower-hour [g/bhp-hr]) and Tier 1 (0.60 g/bhp-hr). The 63 percent reduction comes from comparing the PM emission standards for off-road engines above 175 hp for Tier 2 (0.15 g/bhp-hr) and Tier 0 (0.40 g/bhp-hr). In addition to the Tier 2 requirement, California air board Level 3 verified diesel emission control strategies are required and would reduce PM by an additional 85 percent. Therefore, the Clean Construction Ordinance would result in between an 89 percent (0.0675 g/bhp-hr) and 94 percent (0.0225 g/bhp-hr) reduction in PM emissions, as compared to equipment with Tier 1 (0.60 g/bhp-hr) or Tier 0 engines (0.40 g/bhp-hr).

122 The U.S. EPA's preferred or recommended steady state air dispersion plume model. It is used for dispersion modeling in order to assess air emissions from primary sources.

123 Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2012; *Recommended Methods for Screening and Modeling Local Risks and Hazards*, May 2012; P*roposed Health Risk Assessment Guidelines, Air Toxics New Source Review Program*, January 2016.

124 Bay Area Air Quality Management District, *The San Francisco Community Risk Reduction Plan*: Technical Support Documentation, December 2012.

125 Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program*, Risk Assessment Guidelines, February 2015.

126 California Air Pollution Control Officers Association, Health Risk Assessment for Proposed Land Use Projects, 2009.

127 Panorama Environmental, *Southeast Bay Outfall Islais Creek Crossing Replacement Project Air Quality Technical Report*, 2019.

TABLE 14. CONSTRUCTION $PM_{2.5}$ EMISSIONS AND CANCER RISK AT THE NEAREST SENSITIVE RECEPTOR

Risk Type	Maximum Value	Threshold	Threshold Exceeded?
Cancer risk (per one million persons exposed)	0.6	7.0	No
Total $PM_{2.5}$ annual average concentration (ug/m^3)	<0.1	0.2	No

Note: The SFPUC may either install the tapping tee in Tulare Park or isolate the 60-inch onshore pipeline at Pier 80. This calculation analyzes the more conservative tapping tee option

These emissions results were conservatively modeled assuming installation of approximately 30 percent more piles of more widely varying diameter than the proposed project. Actual emissions generated by the proposed project is expected to be less than those presented.

Source:

Panorama Environmental, *Southeast Bay Outfall Islais Creek Crossing Replacement Project Air Quality Technical Report,* 2019.

San Francisco Department of Public Health, Assess*ment and Mitigation of Air Pollutant Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Revie*w, May 2008.

Jerrett M et al, Spatial Analysis of Air Pollution and Mortality in Los Angeles, Epidemiology, 16:727-736, 2005.

Locations already meeting the Air Pollutant Exposure Zone criteria are subject to a lower significance standard to ensure that a proposed project's contribution to existing health risks would not be significant. In these areas, a proposed project resulting in a contribution to $PM_{2.5}$ concentrations above 0.2 $\mu g/m^3$ or resulting in an excess cancer risk of 7.0 per one million persons exposed would be considered a significant impact.[128] These are the significance thresholds by which a project would result in a considerable contribution to existing cumulative health risks. This analysis, therefore, also addresses the cumulative health risks to sensitive receptors.

As shown in Table 14, $PM_{2.5}$ concentrations at the nearest receptor location would not exceed the 0.2 $\mu g/m^3$ significance threshold. Likewise, the excess cancer risk would be below the threshold of 7.0 in a million. Therefore, the proposed project's health risk impact at the nearest sensitive receptor would be less than significant.

Other Localized Pollutant Concentrations

CO emissions generated from gas-powered truck traffic and other combustion equipment during construction activities could result in CO hotspots, or localized concentrations of CO. Diesel-powered vehicles and equipment, such as those used for project construction, do not emit CO in the same concentrations and are less likely to cause a CO hotspot. As such, congested intersections with a large volume of traffic have the greatest potential to cause high, localized concentrations of CO, which could affect public health. On-road, motor vehicle exhaust in metropolitan areas accounts for as much as 75 percent of CO emissions based on data collected across the nation. Incorporating emissions from non-road mobile sources, including construction equipment and harbor craft, all mobile sources accounted for approximately 80 percent of total CO emissions based on nationwide data.[129] CO emissions and

[128] A 0.2 $\mu g/m^3$ increase in $PM_{2.5}$ would result in a 0.28 percent increase in non-injury mortality or an increase of about twenty-one excess deaths per 1,000,000 population per year from non-injury causes in San Francisco. This information is based on: Jerrett M et al, Spatial Analysis of Air Pollution and Mortality in Los Angeles, Epidemiology, 16:727-736, 2005.
The excess cancer risk has been proportionally reduced to result in a significance criterion of 7.0 per million persons exposed.

[129] U.S. EPA, *Integrated Science Assessment for Carbon Monoxide,* January 2010.

concentrations have been continually decreasing and have not exceeded the eight-hour federal or state air quality standard at any monitoring location, nationwide[130] in decades.[131]

The proposed project would generate a relatively small amount of temporary construction traffic. The 2017 CEQA Air Quality Guidelines indicate that a project would significantly affect CO levels if project traffic would increase traffic volumes at intersections to more than 44,000 vehicles per hour. Roadways in the project area carry less than 2,000 vehicles during a.m. and p.m. peak hours. Vehicles used during construction of the proposed project would generate a maximum of 347 one-way trips per day as well as additional equipment delivery and haul trips (see Section E.6, Transportation and Circulation). Traffic would increase by an average of 28 trips (including construction worker vehicle trips and truck trips) during the peak hour during construction of the proposed project and would not cause traffic levels to exceed 44,000 vehicles per hour at any intersection. The other mobile sources associated with the proposed project, such as off-road equipment and harbor craft, would be operated intermittently and in such a manner where CO emissions would not be concentrated in any one area for a long duration. Consequently, construction of the proposed project would not result in CO concentrations in excess of the state or federal health protective air quality standards in the air basin, and therefore, would not expose sensitive receptors to significant pollutant concentrations that could result in adverse health effects.

Operation

No new operational sources of emissions would be generated, and maintenance activities would be conducted in a manner similar to existing conditions. No operation-related impacts would occur.

Impact AQ-4: The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. (Less than Significant)

Construction

Typical odor sources of concern include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing facilities, fiberglass manufacturing facilities, auto body shops, rendering plants, and coffee roasting facilities. During construction, diesel exhaust from construction equipment, vehicles, and harbor craft, as well as *volatile organic compounds*[132] emitted during paving, would generate some odors, which could increase the odors temporarily in the immediate vicinity of the equipment operation. The odors would dissipate rapidly with distance from the odor-generating activity. The generation of odors from use of diesel engines and paving activities would not be substantial or permanent. No residences are located adjacent to construction activities. A substantial number of people would not be subjected to objectionable odors. Therefore, odor impacts would be less than significant.

130 U.S. EPA Region 9, which includes California, Nevada, and Arizona, has 28 monitoring locations where CO data is collected.

131 U.S. EPA, *Carbon Monoxide Concentrations*, 2017.

132 Precursor pollutants (e.g., benzene, formaldehyde, and methylene chloride) that form ground-level ozone.

Operation

The proposed project would involve operation of the replacement pipelines and infrastructure associated with the SFPUC's existing wastewater system. No new operational sources of odors or other emissions would be generated, and maintenance activities would be conducted in a manner similar to existing conditions. No operation-related impacts would occur.

Impact C-AQ: The proposed project, in combination with cumulative projects, would not result in a significant cumulative impact on air quality. (Less than Significant)

As discussed above, regional air pollution is, by its very nature, primarily a cumulative impact. Past, present and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts.[133] The project-level thresholds for criteria air pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Therefore, cumulative criteria air pollutant impacts are already evaluated under Impact AQ-2.

Similarly, the project site is within the Air Pollutant Exposure Zone and health vulnerability zone, indicating it is an area that already experiences poor air quality. During construction, the proposed project would add new temporary sources of TACs within an area already adversely affected by air quality. The health risk significance thresholds already take into account the cumulative contribution of localized health risks to sensitive receptors from sources included in the citywide modeling plus the proposed project's sources. The proposed project would not exceed the lowered, project-level threshold of 0.2 $\mu g/m^3$ for $PM_{2.5}$ concentrations or 7.0 per million persons for cancer risk. Therefore, the proposed project's contribution to cumulative health risks would be less than cumulatively considerable. The impact would be less than significant.

As discussed under Impact AQ-4, construction of the proposed project would generate odors from diesel exhaust emissions. The project area is primarily industrial and commercial with the nearest residence over 1,000 feet away from the construction work area. Construction of cumulative projects, in combination with the proposed project, occurring during the same timeframe and within close proximity could also result in a cumulative increase in exhaust orders generated by diesel equipment. However, this cumulative impact would be temporary and highly localized and would dissipate rapidly. As such, the cumulative impact related to odors would be less than significant.

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[133] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

E.9. GREENHOUSE GAS EMISSIONS

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
9. 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 any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐	☐

Greenhouse gas (GHG) emissions and global climate change represent cumulative impacts. GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects have contributed and will continue to contribute to global climate change and its associated environmental impacts.

The Bay Area Air Quality Management District (air district) has prepared guidelines and methodologies for analyzing GHGs. These guidelines are consistent with CEQA Guidelines sections 15064.4 and 15183.5, which address the analysis and determination of significant impacts from a proposed project's GHG emissions. CEQA Guidelines section 15064.4 allows lead agencies to rely on a qualitative analysis to describe GHG emissions resulting from a project. CEQA Guidelines section 15183.5 allows for public agencies to analyze and mitigate GHG emissions as part of a larger plan for the reduction of GHGs and describes the required contents of such a plan. Accordingly, the San Francisco Planning Department has prepared "Strategies to Address Greenhouse Gas Emissions in San Francisco"[134] which presents a comprehensive assessment of policies, programs, and ordinances that collectively represent San Francisco's qualified GHG reduction strategy in compliance with the CEQA guidelines. These GHG reduction actions have resulted in a 28 percent reduction in GHG emissions in 2015 compared to 1990 levels,[135] exceeding the year 2020 reduction goals outlined in the air district's 2017 Clean Air Plan, Executive Order S-3-05, and Assembly Bill 32 (also known as the Global Warming Solutions Act).[136] In 2008, the San Francisco Board of Supervisors established citywide GHG reduction limits through Ordinance 81-08 and required each city department to annually report GHG emissions and climate protection initiatives. SFPUC's most recent departmental climate action report was published in March 2014 for the 2012-2013 fiscal year. The SFPUC Climate Action Report summarizes the GHG emissions associated with electricity, natural gas, and fleet fuels consumed by SFPUC operations, and highlights SFPUC's activities to reduce GHG emissions.

134 San Francisco Planning Department, *Strategies to Address Greenhouse Gas Emissions in San Francisco,* July 2017, *http://sf-planning.org/strategies-address-greenhouse-gas-emissions.*

135 San Francisco Department of the Environment, *San Francisco's Carbon Footprint, https://sfenvironment.org/carbon-footprint*, accessed July 19, 2017.

136 Executive Order S-3-05, Assembly Bill 32, and the Bay Area air district's 2017 Clean Air Plan (continuing the trajectory set in the 2010 Clean Air Plan) set a target of reducing GHG emissions to below 1990 levels by year 2020.

According to the 2014 report, total GHG emissions from facility energy use (natural gas and electricity) decreased 76 metric tons (2.9 percent) in FY 12-13 compared to the previous year.

Given that the city has met the state and region's 2020 GHG reduction targets and San Francisco's GHG reduction goals are consistent with, or more aggressive than, the long-term goals established under order S-3-05[137], order B-30-15,[138,139] and Senate Bill 32[140,141] the city's GHG reduction goals are consistent with order S-3-05, order B-30-15, Assembly Bill 32, Senate Bill 32 and the 2017 Clean Air Plan. Therefore, proposed projects that are consistent with the city's GHG reduction strategy would be consistent with the aforementioned GHG reduction goals, would not conflict with these plans or result in significant GHG emissions, and would therefore not exceed San Francisco's applicable GHG threshold of significance.

The following analysis of the proposed project's impact on climate change focuses on the project's contribution to cumulatively significant GHG emissions. Because no individual project could emit GHGs at a level that could result in a significant impact on the global climate, this analysis is in a cumulative context, and this section does not include an individual project-specific impact statement.

Impact C-GG-1: The proposed project would generate greenhouse gas emissions, but not at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for the purpose of reducing greenhouse gas emissions. (Less than Significant)

Individual projects contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction and operational phases. Direct operational emissions include GHG emissions from new vehicle trips and area sources (natural gas combustion). Indirect emissions include emissions from electricity providers; energy required to pump, treat, and convey water; and emissions associated with waste removal, disposal, and landfill operations.

137 Office of the Governor, Executive Order S-3-05, June 1, 2005, *http://static1.squarespace.com/static/549885d4e4b0ba0bff5dc695/t/54d7f1e0e4b0f0798cee3010/1423438304744/California+Executive+Order+S-3-05+(June+2005).pdf*. Executive Order S-3-05 sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million metric tons of carbon dioxide equivalents ($MTCO_2E$)); by 2020, reduce emissions to 1990 levels (approximately 427 million $MTCO_2E$); and by 2050 reduce emissions to 80 percent below 1990 levels (approximately 85 million $MTCO_2E$). Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

138 Office of the Governor, *Executive Order B-30-15,* April 29, 2015, *https://www.gov.ca.gov/news.php?id=18938*, accessed March 3, 2016. Executive Order B-30-15, issued on April 29, 2015, sets forth a target of reducing GHG emissions to 40 percent below 1990 levels by 2030 (estimated at 2.9 million $MTCO_2E$).

139 San Francisco's GHG reduction goals are codified in section 902 of the Environment Code and include: (i) by 2008, determine City GHG emissions for year 1990; (ii) by 2017, reduce GHG emissions by 25 percent below 1990 levels; (iii) by 2025, reduce GHG emissions by 40 percent below 1990 levels; and by 2050, reduce GHG emissions by 80 percent below 1990 levels.

140 Senate Bill 32 amends California Health and Safety Code Division 25.5 (also known as the California Global Warming Solutions Act of 2006) by adding section 38566, which directs that statewide greenhouse gas emissions to be reduced by 40 percent below 1990 levels by 2030.

141 Senate Bill 32 was paired with Assembly Bill 197, which would modify the structure of the State Air Resources Board; institute requirements for the disclosure of greenhouse gas emissions criteria pollutants, and toxic air contaminants; and establish requirements for the review and adoption of rules, regulations, and measures for the reduction of greenhouse gas emissions.

The proposed project would involve operation of the replacement pipelines and infrastructure associated with the SFPUC's existing wastewater system. Operation and maintenance activities would be conducted in a manner similar to existing conditions. The proposed project would not increase the intensity of use of the project site and would not increase use of electricity (energy sources), vehicle trips (mobile sources), or other sources of GHG emissions (e.g., waste) during operations. Therefore, the proposed project would not contribute to long-term increases in GHG emissions. Construction activities would result in temporary increases in GHG emissions from use of combustion equipment and vehicles, transportation of workers and equipment, and waste disposal. The proposed project would be subject to regulations adopted to reduce GHG emissions as identified in the GHG reduction strategy. As discussed below, compliance with the applicable regulations would reduce the project's GHG emissions related to transportation, energy use, and waste disposal.

The proposed project's construction-related emissions would be reduced through compliance with the city's Construction and Demolition Debris Recovery Ordinance, Clean Construction Ordinance, Construction and Demolition Debris Recycling Requirements, Resource Conservation Ordinance, and Green Building Code requirements. These regulations serve to reduce GHG emissions from construction activities, vehicles, and equipment. These regulations reduce the amount of materials sent to a landfill, reducing GHGs emitted by landfill operations. These regulations also require non-PVC plastics be specified in construction projects and promote reuse of materials, conserving their embodied energy[142] and reducing the energy required to produce new materials. Thus, the proposed project was determined to be consistent with San Francisco's GHG reduction strategy.[143]

SFPUC is required to comply with local GHG reduction regulations, which have proven effective as San Francisco's GHG emissions have measurably decreased when compared to 1990 emissions levels, demonstrating that the city has met and exceeded Executive Order S-3-05, Assembly Bill 32, and the *2017 Clean Air Plan* GHG reduction goals for the year 2020. Furthermore, the city has met its 2017 GHG reduction goal of reducing GHG emissions to 25 percent below 1990 levels by 2017. Other existing regulations, such as those implemented through Assembly Bill 32, will continue to reduce a proposed project's contribution to climate change. In addition, San Francisco's local GHG reduction targets are consistent with the long-term GHG reduction goals of Executive Order S-3-05, Executive Order B-30-15, Assembly Bill 32, Senate Bill 32 and the *2017 Clean Air Plan.* Because the proposed project is consistent with the city's GHG reduction strategy, it is also consistent with the GHG reduction goals of Executive Order S-3-05, Executive Order B-30-15, Assembly Bill 32, Senate Bill 32 and the *2017 Clean Air Plan*, and would not conflict with these plans, and would therefore not exceed San Francisco's applicable GHG threshold of significance. In addition to compliance with these regulations, the SFPUC is currently taking other actions that further the city's GHG reduction goals, including but not limited to implementation of the SFPUC energy efficiency program and installation of solar photovoltaic projects. Applicable actions for the proposed project include the use of construction equipment, vehicles, and watercraft that meet emissions requirements and the use of energy

[142] Embodied energy is the total energy required for the extraction, processing, manufacture and delivery of building materials to the building site.

[143] San Francisco Planning Department, *Greenhouse Gas Analysis: Compliance Checklist for Southeast Bay Outfall Islais Creek Crossing Replacement Project*, October 28, 2019

efficient equipment and lighting. As such, the proposed project would result in a less-than-significant impact with respect to GHG emissions. No mitigation measures are necessary.

E.10. WIND

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
10. WIND—Would the project:					
a) Create wind hazards in publicly accessible areas of substantial pedestrian use?	☐	☐	☐	☒	☐

Impact WI-1: The proposed project would not create wind hazards in publicly accessible areas of substantial pedestrian use. (No Impact)

A project's wind impacts are directly related to its height, orientation, design, location, and surrounding development context. Based on wind analyses for other development projects in San Francisco, a building that does not exceed a height of 85 feet generally has little potential to cause substantial changes to ground-level wind conditions. The proposed project primarily involves construction and operation of belowground or at-grade features. The aboveground project components include the northern and southern flow meter vaults, which would extend approximately 1 to 2 feet above ground; the manhole at Tulare Park (if the tapping tee option is selected), which would extend approximately 1 foot above ground; and replacement fencing on the project perimeter at Islais Creek Park and Third Street, which would be 6 to 10 feet tall. No buildings or other new permanent aboveground structures are proposed as a part of the project. The proposed project would not create wind hazards because these structures would not block or redirect wind. No impact would occur.

Impact C-WI: The proposed project, in combination with cumulative projects in the vicinity of the proposed project would not have significant cumulative wind impacts. (No Impact)

As discussed in Impact WI-1, the proposed project would not alter wind by blocking or redirecting wind in a way that could create wind hazards in any publicly accessible areas. Thus, the project would not contribute to any potential cumulative impact associated with wind (no impact).

E.11. SHADOW

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
11. SHADOW—Would the project:					
a) Create new shade that substantially and adversely affects the use and enjoyment of publicly accessible open spaces?	☐	☐	☐	☒	☐

Impact SH-1: The proposed project would not create new shadow that substantially and adversely affects the use and enjoyment of publicly accessible open spaces. (No Impact)

Section 295 of the planning code, the Sunlight Ordinance, was adopted in 1984 following voter approval of Proposition K. The ordinance generally prohibits the issuance of building permits for structures greater than 40 feet tall that would cast significant new shade or shadows on certain public open spaces under the jurisdiction of the San Francisco Recreation and Parks Department, unless the San Francisco Recreation and Park Commission determines that the shade or shadow would not have an adverse impact on the use of such property.

Although there are no public open spaces under the jurisdiction of the San Francisco Recreation and Parks Department in the vicinity of the project site, there are two parks within the Port of San Francisco jurisdiction that are located in the project area: Islais Creek Park and Tulare Park. Islais Creek Park is located on the south shore of Islais Creek west of the project site, and Tulare Park is located on the north shore of Islais Creek east of the Islais Creek Bridge. The project would not include any new buildings or new structures greater than 40 feet in height. Project components with the potential to create a new shadow would be limited to the proposed vaults on the northern and southern banks of Islais Creek and manhole in Tulare Park, approximately 1 to 2 feet above the ground. Given their size and location, the proposed vaults and manhole would not create a new or increased shadow that would substantially affect the use and enjoyment of outdoor recreational facilities or other public areas. As a result, there would be no impact.

Impact C-SH: The proposed project, in combination with cumulative projects in the vicinity of the proposed project would not have significant cumulative shadow impacts. (No Impact)

Because the proposed project would have no shadow-related impacts, it would not contribute to any potential cumulative impact associated with shadow (no impact).

E.12. RECREATION

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
12. 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 facilities 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?	☐	☐	☐	☒	☐

No designated recreational facilities managed by the San Francisco Recreation and Parks Department are located in the project area. The following recreational parks and facilities managed by other agencies are located within or in close proximity to the project work area and staging areas.

- Islais Creek Park is a small park, approximately 0.5 acre in size, located at the northwest corner of Quint Street and Arthur Avenue, immediately adjacent to the booster station. The park property is owned and managed by the Port of San Francisco in cooperation with neighborhood groups, including the Friends of Islais Creek and Kayaks Unlimited. This park features a picnic benches, a gravel beach, small watercraft storage, portable restroom facilities, and a boat dock for small boats (Islais Landing) and recreational fishing. The gravel beach provides access to the creek and is typically used for kayak launching.[144] A portion of Islais Creek Park is proposed for use as a staging area during project construction.

- Tulare Park is a small park, approximately 0.2 acre in size, located on the north bank of Islais Creek, between Third Street and Illinois Street. The park property is owned by the Port of San Francisco. The park features a walking path, trees and landscaping, and a bench overlooking the channel. Installation of a tapping tee and associated manhole would occur at Tulare Park during construction of the proposed project.

- Bayview Gateway is a 1-acre open space owned by the Port of San Francisco that acts as a turning point for the San Francisco Bay Trail where the trail continues north through the city. The gateway is bounded by Third Street, Cargo Way, Illinois Street, and Islais Creek and includes new landscaping, pedestrian access, and a plaza with benches and tables.[145] The westernmost portion of the gateway is located approximately 250 feet south of the project work area.

144 City and County of San Francisco, Port of San Francisco, Parks and Open Space Interactive Map, *https://sfport.com/parks-and-open-spaces*, accessed on February 21, 2019.

145 Port of San Francisco, Bayview Gateway, *https://sfport.com/bayview-gateway*, accessed on March 28, 2019.

- 3rd and Army Park is an industrial concrete plaza along the northern shoreline of Islais Creek approximately 650 feet east of the project work area. The area is frequently used for skateboarding[146] and also provides a paved walking path along the creek and bench seating.

- Pier 94 Wetlands is a 1.5-acre salt marsh wetland providing wildlife habitat that is managed by the Golden Gate Audubon Society and owned by the Port of San Francisco.[147] This wetland area is located approximately 550 feet east of the proposed Pier 94 Backlands staging area and approximately 800 feet north of the proposed Pier 94/96 staging areas.

- Heron's Head Park is a 22-acre restored open space and wildlife habitat that is managed by the Port of San Francisco and is located at the eastern terminus of Cargo Way at Jennings Street, just south of Pier 96.[148] The park features an off-leash dog area, hiking and bicycle trails, and picnic facilities and is located approximately 500 feet south of the proposed Pier 94 Backlands staging area.

- The San Francisco Bay Trail is a multipurpose recreational trail that provides opportunities for walking, jogging, and bicycling around the San Francisco Bay.[149] A paved portion of the Bay Trail extends along Cargo Way from Heron's Head Park to Amador Street and crosses Amador Street to Illinois Street and continues along the Illinois Street Bridge.[150] The trail is located approximately 300 feet east of the proposed Pier 94 Backlands staging area and is adjacent to Tulare Park at the north end of the Illinois Street Bridge.

Impact RE-1: 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 facilities would occur or be accelerated. (Less than Significant)

Bayview Gateway, 3rd and Army Park, Pier 94 Wetlands, Heron's Head Park, and the San Francisco Bay Trail would not be affected by construction of the proposed project. These recreational facilities are located outside of the project work areas and staging areas and are not discussed further.

Construction

As discussed in Section E.3, Population and Housing, construction of the proposed project would not induce population growth which could increase the use of the existing parks or other recreational facilities such that physical deterioration of the facilities would occur or be accelerated; however, construction of the proposed project would involve use of both Islais Creek Park and Tulare Park.

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146 7x7, 3 *Iconic San Francisco Spots that Shaped Skateboarding History*, *https://www.7x7.com/3-iconic-san-francisco-spots-that-shaped-skateboarding-history-1787343972.html*, accessed March 26, 2019

147 Port of San Francisco, *Pier 94 Wetlands*. *http://sfport.com/pier-94-wetlands*, accessed on March 21, 2016.

148 City and County of San Francisco, Port of San Francisco, *Heron's Head Park*, *http://www.sf-port.org/index.aspx?page=210*, accessed on March 21, 2016.

149 San Francisco Bay Trail, Welcome to the San Francisco Bay Trail, *http://baytrail.org/about-the-trail/welcome-to-the-san-francisco-bay-trail/*, accessed February 21, 2019.

150 San Francisco Bay Trail, Navigational Map, *http://baytrail.org/baytrailmap.html*, accessed February 21, 2019.

A portion of Islais Creek Park would be used as a staging area and the construction work area to accommodate construction activities on the southern bank of Islais Creek, as shown on Figure 11 below. Although the floating dock would be temporarily disassembled and stored during construction, access to Islais Creek would be maintained for kayakers and other recreational users during construction via a pedestrian access path that would be established from the parking lot to the creek shore along the southwestern edge of the park (shown on Figure 11). Increased use of alternative parks or kayak launching areas is not expected because kayak access to the shoreline would be maintained during construction. Once construction is completed, the floating dock would be reinstalled to its original location and reopened for public use. Limited tree trimming and/or removal in Islais Creek Park may be required to provide sufficient area for staging equipment.

If the tapping tee and line-stop equipment in Tulare Park are installed, construction of the proposed project would occur within Tulare Park, where an approximately 0.03-acre (1,307-square foot) work area would be established. While only tree trimming is anticipated in Tulare Park, removal of up to 11 trees may be required to accommodate construction equipment access and construction activities. Tulare Park would be temporarily closed to the public for approximately 80 days over the duration of construction to accommodate installation of a tapping tee and manhole. Alternatively, if the Pier 80 outfall structure is used to isolate the onshore pipeline, Tulare Park would be used as a staging area only and no tree removal would be required. Use of Tulare Park as a staging area would require closure of the park during the entire duration of construction.

Construction activities, such as mobilization of materials and heavy equipment, clearing and grubbing of vegetation, and ground disturbance, have the potential to cause physical deterioration of park facilities at both Islais Creek Park and Tulare Park. Upon completion of construction, SFPUC would implement SFPUC Standard Construction Measure 8 (Visual and Aesthetic Considerations), which would require that both parks be restored to preconstruction conditions and returned to recreational use. Should tree removal be required at Islais Creek Park or Tulare Park, trees would be planted to replace removed trees at a 1:1 ratio. The SFPUC would also coordinate with the Port of San Francisco regarding the restoration of park facilities and amenities. As a result, proposed project construction would not cause substantial physical deterioration of park facilities and the impact would be less than significant.

Operation

The proposed project would replace and upgrade existing wastewater infrastructure, which is not a land use that would draw people to the area or increase the use and physical deterioration of recreational facilities. The existing pedestrian walkway on the southern shore of the creek would be extended from the booster station to the floating dock at Islais Creek Park. Although the walkway enhancement would provide better access to the park from Third Street, it is not expected to substantially increase the use of the park because an existing footpath from Third Street currently exists. As discussed in Section E.3, Population and Housing, the proposed project is not expected to induce population growth that would in turn increase the use of the existing parks or other recreational facilities such that physical deterioration of the facilities would occur or be accelerated. Therefore, no impact would occur during operation.

FIGURE 11. ISLAIS CREEK PARK

SOURCE: Tele Atlas North America, Inc., U.S. and Canada Detailed Streets GIS dataset, 2018; SFPUC, CAD dataset for Southeast Bay Outfall Islais Creek Crossing Replacement Project, 2019; DigitalGlobe, San Francisco Area Aerial Imagery retrived on August 31, 2017.

Impact RE-2: The proposed project would not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. (No Impact)

The proposed project would not include recreational facilities. As discussed in Section E.3, Population and Housing, the proposed project is not expected to induce population growth that would in turn generate new recreational demand, requiring the construction or expansion of recreational facilities. Therefore, no impact would occur.

Impact C-RE: The proposed project, in combination with cumulative projects, would not have a substantial cumulative impact on recreational resources. (No Impact)

The geographic scope for potential recreation impacts includes the project site and recreational resources in the Bayview–Hunters Point neighborhood. The proposed project would have less-than-significant construction phase impacts on Islais Creek Park and Tulare Park. Of the cumulative projects identified in Table 3, p. 38, no cumulative projects would result in physical impacts on Islais Creek Park or Tulare Park. As a result, there would be no cumulative impact on recreational resources. Furthermore, none of the cumulative projects nor the proposed project would involve construction of housing that would increase the population and use of recreational resources in the area. As a result, the proposed project, in combination with the cumulative projects, would not have a cumulative impact on recreational resources (no impact).

E.13. UTILITIES AND SERVICE SYSTEMS

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
13. UTILITIES AND SERVICE SYSTEMS—Would the project:					
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐	☐
b) Have sufficient 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 would 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) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒	☐

The proposed project involves the replacement of two existing pipelines for treated wastewater. The new pipelines would not result in an expansion of the existing wastewater treatment system capacity. The proposed project also includes the installation of buried electrical conduits between the booster station and the southern vault. The environmental impacts of construction and operation of the replacement pipelines and associated infrastructure are addressed in this initial study. This section addresses impacts on other utilities and service systems resulting from the proposed project.

Impact UT-1: The proposed project would not require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects, and would not result in a determination by the wastewater treatment provider that would serve the proposed project that it has inadequate capacity to serve the project's demand. (Less than Significant)

Water Facilities

The construction of the proposed project would require a limited amount of potable water for drinking, onsite sanitary needs, and concrete/slurry mixing. The San Francisco Public Works Code, Article 21, restricts the use of potable water for soil compaction and dust control activities associated with any

construction project in the city and requires the use of recycled water. The limited amount of water required for construction would not result in the need for an additional water supply nor would it require construction of new or expanded water facilities. Existing utilities near the booster station and on the southern side of Islais Creek include a 16-inch-diameter auxiliary water supply system line along Third Street and to the west along Arthur Avenue and Quint Street. The proposed project would not require relocation of this pipeline or other water facilities. Therefore, construction impacts to water supply and facilities would be less than significant.

Operation and maintenance of the proposed project would not require greater amounts of water than the existing pipelines and would have no impact on water supply.

Wastewater Treatment and Stormwater Drainage Facilities

The majority of the proposed project would be located in an area where stormwater drains directly into Islais Creek. Third Street, adjacent to the proposed northern vault, and the Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas drain directly to receiving waters (i.e., Islais Creek, San Francisco Bay) through a separate stormwater system.

During construction, wastewater would be generated from workers' sanitary facilities and process-related uses such as equipment cleaning and washouts. Sanitary facilities would be serviced by a vendor and sanitary drainage would be hauled offsite for disposal. Construction-related wastewater would be routed directly to the nearest local wastewater connection. Construction of the proposed project would also generate water because of dewatering associated with the in-channel work areas and drainage from bins that contain excavated spoils and muck. The water from inside the cofferdams would be pumped to baker tanks if necessary, then treated onsite and either discharged back to Islais Creek from the baker tank or discharged directly to Islais Creek from the dewatered area in accordance with applicable permits. A total of approximately 3.5 million gallons of water within the cofferdams is anticipated to be dewatered during project construction. Construction impacts related to stormwater drainage and runoff are discussed in Section E.17, Hydrology and Water Quality.

The southeast plant has an average dry-weather design flow capacity of approximately 85 mgd.[151] Wastewater generated during project construction (e.g., through the use of process water during construction) would constitute a small fraction of the southeast plant's capacity. The water within the cofferdams would be discharged into Islais Creek, in compliance with regulatory requirements, and would not be treated through the southeast plant. Construction of the proposed project would not require development of new wastewater treatment or stormwater facilities or expansion of existing facilities. Furthermore, it would not result in a determination by the SFPUC that it has inadequate capacity to serve the project's demand.

Operation of the proposed project would not generate greater amounts of wastewater compared with the existing pipeline system. The proposed project would result in approximately 0.09 acre of permanent new impervious surface, which would result in a negligible increase in stormwater runoff directly into Islais Creek and have no effect on stormwater drainage facilities. Operation of the proposed project would not

[151] San Francisco Bay Regional Water Quality Control Board, *Order No. R2-2013-0029*, National Pollutant Discharge Elimination System No. CA0037664, August 2013.

require new or expanded stormwater drainage facilities and, therefore, would have no operational impacts to wastewater treatment or stormwater drainage facilities.

Electric Power, Natural Gas, and Telecommunication Facilities

As described in Section A, Project Description, approximately 75 feet of buried electrical conduit would be installed between the booster station and the southern vault to operate new flow meters and equipment installed along the southern creek bank. Power to the flow meters and equipment would be provided from the booster station. The proposed project would require the temporary relocation of an underground PG&E duct bank within the west portion of Third Street. The electrical facilities within the duct bank would be relocated onto two temporary wood poles during construction. Once construction is complete, the electrical facilities would be reburied in their original location. As described in Section A, Project Description, one light rail pole on Third Street would be permanently relocated approximately 14 feet to the north. The proposed project would not require the relocation or construction of any new or expanded electric power facilities and would not result in significant environmental effects. The proposed project would not require the construction, relocation, or use of natural gas or telecommunication facilities during construction or operation. Therefore, no impact related to electric power, natural gas, or telecommunication facilities would occur.

Impact UT-2: The proposed project would have a sufficient water supply available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. (Less than Significant)

Construction

Through its regional water system, the SFPUC provides potable water within San Francisco, including the project area. Project construction would require a limited amount of potable water for drinking, onsite sanitary needs, and concrete/slurry mixing; therefore, the use of potable water for construction of the proposed project would be minimal. The San Francisco Public Works Code, Article 21, restricts the use of potable water for soil compaction and dust control activities associated with any construction project in the city and requires the use of recycled water, well water, or groundwater. Non-potable water may be used for activities that do not involve aerial spraying or pressure washing, similar to other construction projects in the city. Title 22 of the California Code of Regulations (Division 4) allows for use of recycled water for dust control on roads and streets, backfill consolidation around non-potable piping, and soil compaction, as well as for cleaning roads, sidewalks, and outdoor work areas. Non-potable water is available from the southeast plant's fill station for recycled water on Quint Street, near the project area. The use of recycled water would reduce use of potable water for construction activities. Construction of the proposed project would not require more potable water than that available through existing entitlements and resources, nor would it require new or expanded water supply resources or entitlements. Therefore, construction impacts related to water supply availability would be less than significant.

Operation

Operation of the proposed project would not require more water than the amount that is currently used by the existing system. Furthermore, operation of the project would not require new or expanded water supply resources or entitlements. As such, operational impacts to water supply resources and entitlements would be less than significant.

Impact UT-3: The proposed project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. (Less than Significant)

Construction

In accordance with section 708 of the San Francisco Environment Code, the SFPUC would require the construction contractor to submit a Construction and Demolition Debris Management Plan for approval. The plan would demonstrate how the project would meet the required minimum 75 percent diversion rate for project-related construction and demolition debris, in compliance with San Francisco Construction and Demolition Debris Recovery Ordinance (Ordinance No. 27-06). The contractor would evaluate all recycling and reuse options for construction material to determine the feasibility of recycling and reuse prior to disposing material at a landfill. The SFPUC would meet the diversion goal by recycling a portion of non-hazardous debris and beneficially reusing a portion of the soil, if feasible.

In September 2015, the city approved an agreement with Recology, Inc., for transport and disposal of the city's municipal solid waste at the Recology Hay Road Landfill in Solano County. Under this agreement, disposal of municipal solid waste began in January 2016 at this landfill and is expected to continue for approximately nine years, with an option to renew the agreement thereafter for an additional six years.[152] The Hay Road Landfill has a maximum permitted capacity of 37 million cubic yards and a remaining capacity of 30.4 million cubic yards.[153] Other landfills in the region include the Altamont Landfill, which has a permitted capacity of 124.4 million cubic yards and a remaining capacity of 65.4 million cubic yards,[154] and the Corinda Los Trancos Landfill (Ox Mountain), which has a permitted capacity of 60.5 million cubic yards and remaining capacity of 22.2 million cubic yards.[155]

Waste materials generated during construction of the proposed project would consist primarily of excavated soil/muck, asphalt, concrete, and pipe. The materials would either be recycled at an approved recycling facility or disposed of at an offsite permitted facility, in compliance with section 708 of the San Francisco Environment Code.

Construction of the proposed project would generate approximately 14,000 cubic yards of excavated sediment, which would constitute the majority of the waste generated from project construction. Depending on the quality and testing of the excavated sediment, it would be treated as either non-hazardous or hazardous waste. Non-hazardous sediment excavated from the project site would be deposited at a landfill. The Hay Road, Altamont, and Corinda Los Trancos (Ox Mountain) Landfills have

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152 City and County of San Francisco Planning Department, *Better Market Street Project Initial Study*, Planning Department Case No. 2014.0012E, March 30, 2016, http://sfmea.sfplanning.org/2014.0012E_BMS_Initial%20Study%20document-Final.pdf, accessed February 26, 2019.

153 California Department of Resources Recycling and Recovery, *Solid Waste Information System, Recology Hay Road (48-AA-0002) Facility Detail*, https://www2.calrecycle.ca.gov/swfacilities/Directory/48-AA-0002/#, accessed February 26, 2019.

154 California Department of Resources Recycling and Recovery, *Solid Waste Information System, Altamont Landfill and Resource Recovery (01-AA-0009) Facility Detail*, https://www2.calrecycle.ca.gov/swfacilities/Directory/01-AA-0009/, accessed February 26, 2019.

155 California Department of Resources Recycling and Recovery, *Solid Waste Information System, Corinda Los Trancos Landfill (Ox Mountain) (41-AA-0002) Facility Detail*, https://www2.calrecycle.ca.gov/swfacilities/Directory/41-AA-0002/, accessed February 26, 2019.

a collective remaining capacity of 118 million cubic yards. Even if no *beneficial reuse*[156] of excavated material is determined to be feasible, the landfills would have sufficient capacity to accommodate the 14,000 cubic yards of materials excavated during construction. However, excavated sediment that is classified as contaminated would not be suitable for reuse and, therefore, would be treated as hazardous waste. Excavated sediments classified as hazardous waste would be hauled by truck to an appropriate facility for disposal. The closest class I landfill (for hazardous waste) is the Kettleman Hills Landfill, with a capacity of 4.9 million cubic yards. Spoils with polychlorinated biphenyls that exceed the allowable limit for disposal in California would be sent to Chemical Waste Management of the Northwest[157] in Arlington, Oregon; the landfill capacity of that facility is 3.7 million cubic yards. These landfills would have sufficient capacity to accommodate excavated materials that have been classified as hazardous waste. Construction of the proposed project would have a less-than-significant impact on landfill capacity.

Operation

Operation of the proposed project would not generate solid waste. The proposed project components would be unmanned and would not require a workforce and would not generate waste materials. Maintenance would occur as needed and at a frequency similar to that for the existing pipelines. Operation of the proposed project would not increase the amount of waste being generated. Therefore, proposed project operations would have no impact on landfill capacity.

Impact UT-4: The proposed project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste. (No Impact)

The California Integrated Waste Management Act of 1989 (Assembly Bill 939) requires municipalities to adopt an integrated waste management plan to establish objectives, policies, and programs relative to waste disposal, management, source reduction, and recycling. In addition, as described in Impact UT-3, the San Francisco Construction and Demolition Debris Recovery Ordinance (Ordinance No. 27-06) requires that a minimum of 75 percent of all construction and demolition debris be recycled and diverted from landfills. Ordinance No. 100-09, the Mandatory Recycling and Composting Ordinance, requires all San Francisco residents to separate their refuse into recyclables, compostables, and trash. Construction and operation of the proposed project would be subject to these ordinances as well as all other applicable statutes and regulations related to solid waste. In addition, all landfills identified by the SFPUC for the disposal and recycling of construction and demolition debris are permitted for the types of waste that would be generated by the proposed project; these landfills are required to meet federal, state, and local solid waste regulations. The proposed project would comply with applicable federal, state, and local solid waste regulations, and no impact would occur.

Impact C-UT: The project, in combination with cumulative projects, would not result in significant cumulative impacts on utilities and service systems. (Less than Significant)

The geographic scope of cumulative impacts on water, wastewater treatment, and stormwater drainage facilities is the Bayside Drainage Basin. For landfill capacity during construction, the geographic scope

156 Treated biosolids can be beneficially reused for a variety of uses such as landfill cover, agricultural land application, soil blending, and compost.

157 Chemical Waste Management of the Northwest is a Resource Conservation and Recovery Act/Toxic Substances Control Act Subtitle C landfill that manages hazardous waste, including polychlorinated biphenyls.

consists of the service areas of San Francisco and the surrounding municipalities where recycling, reuse, and disposal of construction-related waste could occur. For compliance with solid waste statutes and regulations, the geographic area encompasses the service areas of San Francisco, Alameda, and San Mateo Counties.

Water Facilities

The use of water during operation is anticipated to remain similar to existing conditions (no impact); therefore, operation of the proposed project would not contribute to cumulative impacts on water facilities or supplies. As discussed in Impact UT-1, construction of the proposed project would require the use of both potable and non-potable water. Other projects proposed in the city (including those listed in Table 3, p. 38, and shown in Figure 6, p. 37) are also expected to involve the use of potable and non-potable water during construction. However, any use of potable or non-potable water during construction of the proposed project and cumulative projects would be temporary and would not exceed available water supplies. The proposed project, in combination with the cumulative projects, would have a less-than-significant cumulative impact on water facilities or supplies.

Wastewater Treatment and Stormwater Drainage Facilities

As discussed in Impact UT-1, the proposed project operations would have no impact on wastewater treatment or stormwater drainage facilities and, therefore, would not contribute to any potential cumulative impacts on those facilities. The cumulative projects could involve construction-related wastewater discharges to the combined sewer system, resulting in increased discharges to the combined sewer system. Construction-period discharges would be temporary in nature and would not typically involve the use or discharge of large volumes of water. Permit requirements would ensure that discharges to the combined sewer system would not exceed the volume or treatment requirements of the southeast plant. As a result, the proposed project construction, in combination with the cumulative projects, would have a less-than-significant cumulative impact on wastewater treatment facilities and stormwater drainage facilities.

Electric Power, Natural Gas, and Telecommunications Facilities

As discussed in Impact UT-1, the proposed project includes the installation of new electrical conduit to connect the proposed project to existing distribution lines. However, the proposed project would not require relocation or construction of new or expanded electric power, natural gas, or telecommunications facilities that would result in significant environmental effects. As a result, the proposed project, would not contribute to any potential cumulative impact related to electric power, natural gas, and telecommunications facilities (no impact).

Landfill Capacity and Compliance with Solid Waste Statutes and Regulations

The proposed project would have no impacts related to solid waste statutes and regulations; therefore, the cumulative analysis does not consider this topic. Similarly, operation of the proposed project would have no impact on landfill capacity and, therefore, would not contribute to any potential cumulative impact on landfills.

The proposed project and the cumulative projects in Table 3, p. 38, and shown in Figure 6, p. 37, as well as those in surrounding municipalities, would generate construction waste and dispose of the waste in offsite disposal facilities. Construction waste from the proposed project and cumulative projects would be largely offset by existing San Francisco ordinances and the policies of other municipalities regarding waste reduction. The landfills where waste from the cumulative projects and the proposed project would be disposed of have more than 126 million cubic yards of total remaining capacity, and none of the landfills are anticipated to reach capacity prior to 2034.[158,159,160,161,162,163,164] The existing landfills would have a sufficient capacity to accommodate construction-generated waste for the proposed projects and reasonably foreseeable cumulative projects. As such, the proposed project, in combination with the cumulative projects, would have a less-than-significant cumulative impact on landfill capacity.

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158 California Department of Resources Recycling and Recovery, *Facility/Site Summary Details: Corinda Los Trancos Landfill (Ox Mountain) (41-AA-0002), http://www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/*, accessed October 28, 2018.

159 San Mateo County Environmental Health Division, *Ox Mountain Landfill Environmental Impact Report Technical Addendum, Clarification of Landfill Capacity,* March 2017.

160 California Department of Resources Recycling and Recovery, *Facility/Site Summary Details: Kettleman Hills – B18 Nonhaz Codisposal (16-AA-0023), https://www2.calrecycle.ca.gov/swfacilities/Directory/16-AA-0023,* accessed October 28, 2018.

161 California Department of Resources Recycling and Recovery, *Facility/Site Summary Details: Altamont Landfill & Resource Recovery (01-AA-0009), http://www.calrecycle.ca.gov/SWFacilities/Directory/01-AA-0009/Detail/*, accessed October 28, 2018;

162 Waste Management, Inc., *Altamont Landfill Sustainability*, http://altamontlandfill.wm.com/sustainability/index.jsp, accessed October 28, 2018.

163 Waste Management, Inc., *Kettleman Hills*, https*://www.wmsolutions.com/pdf/brochures/CWM_Kettleman_ Hills_Brochure.pdf*, accessed on October 28, 2018.

164 Waste Management, Inc., *Chemical Waste Management of the Northwest*, *https://www.wmsolutions.com/pdf/factsheet/CWM_Arlington.pdf*, accessed on October 29, 2018.

E.14. PUBLIC SERVICES

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
14. PUBLIC SERVICES—Would the project:					
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other public facilities?	☐	☐	☒	☐	☐

Impact PS-1: The proposed project would not result in substantial adverse physical impacts associated with the provision of 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 public services, such as fire protection, police protection, schools, parks, or public facilities. (Less than Significant)

The San Francisco Police Department and San Francisco Fire Department provide emergency services in the project area. The project site, including temporary staging areas, would be located within the Bayview police district, which covers the southeastern part of San Francisco.[165] The Bayview police station is located at 201 Williams Avenue, approximately 1.5 miles from the project site. The fire department provides fire protection services; responds to other emergency situations, including hazardous materials incidents; provides medical aid; and offers fire prevention and safety training. There are three fire stations within 1 mile of the project site and staging areas: Station No. 9 at 2245 Jerrold Avenue, Station No. 25 at 3305 Third Street, and Station No. 37 at 798 Wisconsin Street.[166]

Construction

Incidents requiring law enforcement, fire protection, or emergency medical services could occur during construction. Responding to such incidents is routine for the police and fire departments as construction projects are common and ongoing throughout the city. Furthermore, any incremental increase in demand for these services during construction would be temporary and would not require construction of new or physically altered facilities to maintain service ratios. As discussed under Impact PH-1, project construction workers who do not live in the project vicinity would most likely commute from elsewhere in the region rather than relocate from more distant cities or towns and would not cause population growth in the area. Therefore, construction of the proposed project would not result in the need for new or expanded schools

165 San Francisco Police Department, *Streets and Police Districts Map*, 2015, http://sanfranciscopolice.org/police-district-maps, accessed October 25, 2018.

166 San Francisco Fire Department, *Fire Station Locations*, *http://sf-fire.org/fire-station-locations*, accessed October 25, 2018.

or parks due to relocation of construction workers. Construction impacts related to the provision of new or altered public service facilities would be less than significant.

Operation

Operation of the proposed project would not require an elevated level of emergency response or result in an increase in public safety–related requests because project components would be constructed in accordance with all applicable fire codes and public safety standards. The project components would be designed in accordance with SFPUC seismic design requirements.[167] Project facilities would be unmanned and would not require a permanent workforce during operation. The proposed project would not involve developing new residential units or services that would generate a new residential population in the area. Therefore, the proposed project would not cause an increase in the demand on existing schools that would affect school enrollment or performance objectives and would not result in the need for new or expanded parks. The proposed project would have no impact related to the provision of new or altered public service facilities.

Impact C-PS: The proposed project, in combination with cumulative projects, would not have a significant cumulative impact on public services. (Less than Significant)

Construction

The geographic scope for potential cumulative public service impacts encompasses the areas served by the police district and fire stations that would serve the proposed project. As discussed under Impact PS-1, construction of the proposed project could result in the need for law enforcement, fire protection, or emergency medical services response. Construction of cumulative projects could result in the same need for police, fire, and emergency services that serve the proposed project area. The potential increase in demand for police, fire, and emergency services during construction of the proposed and cumulative projects would be temporary.

The city has initiated six-year hiring plans for both the police and fire departments.[168] Given the ongoing efforts of each department to increase staffing levels and facilities to accommodate projected growth, any increased need for law enforcement or fire protection services resulting from the proposed project and reasonably foreseeable projects would not be expected to exceed the level of demand anticipated by the police or fire departments or require the construction of new or physically altered governmental facilities that were not already planned. As a result, the proposed project in combination with the cumulative projects would result in a less-than-significant cumulative impact related to emergency services.

Construction of the proposed project would have no impact on schools, nor would it result in substantial adverse physical impacts or generate the need for new or physically altered recreational areas. As a result,

167 San Francisco Public Utilities Commission, *General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities,* June 2014.

168 City and County of San Francisco, Office of the Mayor, *Mayor Lee Announces Long Term and Comprehensive Hiring Plan for City's Police and Fire,* 2012, *http://sfmayor.org/mayor-lee-announces-long-term-comprehensive-hiring-plan-city%E2%80%99s-police-fire-0*, accessed April 22, 2018.

construction of the proposed project would not contribute to any potential cumulative impact on schools or result in the need for new or physically altered recreational areas (no impact).

Operation

As discussed in Impact PS-1, operation of the proposed project would not result in the need for new or altered public service facilities. Thus, operation of the project would not contribute to any potential cumulative impact associated with the need for new or altered public service facilities (no impact).

E.15. BIOLOGICAL RESOURCES

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
15. BIOLOGICAL RESOURCES—Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or 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?	☐	☐	☐	☐	☒

The project site is not located within any local, regional, or state habitat conservation plan areas; therefore, Topic 14(f) is not applicable to the proposed project and is not discussed further.

The proposed project would be operated in a similar manner to the operation of the existing system; therefore, no impacts on biological resources would occur from operation of the proposed project. The following impact discussion focuses solely on impacts related to construction of the proposed project.

This section describes the existing terrestrial and aquatic biological resources within the vicinity of the proposed project. Information used in preparation of this section is from database queries from the California Natural Diversity Database (CNDDB) and the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation database, published scientific literature, and an on-site habitat

assessment conducted on February 21, 2019. Information from the following resources was also reviewed and incorporated:

- Port of San Francisco Regional General Permit for Shoreline Maintenance Repair, Rehabilitation, and Replacement Activities Biological Assessment[169]
- The 34th America's Cup and James R. Herman Cruise Terminal and Northeast Wharf Plaza Biological Assessment[170]
- The Port of San Francisco Regional General Permit Wetland Delineation[171]
- California Department of Transportation (Caltrans) Islais Creek Bridge Rehabilitation Project Biological Assessment[172] and Natural Environmental Study[173]
- Caltrans Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish[174]
- SFPUC Southeast Bay Outfall Islais Creek Crossing Replacement Project Endangered Species and Essential Fish Habitat Biological Assessment[175]

Habitat quality and species distribution were considered in evaluating the likelihood of special-status species occurrence in the project area.

Marine Habitats

Islais Creek

The project area is located within the non-culverted, channelized eastern portion of Islais Creek (known as the Islais Creek Channel), which is connected to and tidally influenced by the San Francisco Bay. Most of the freshwater within culverted/piped portions of Islais Creek (which would otherwise flow to Islais Creek Channel) is diverted to the SFPUC's Southeast Treatment Plant; therefore, the Islais Creek Channel contains limited freshwater inflows.[176] The significant reduction in freshwater discharges from the inland portions of the creek has caused this channelized section to no longer function as a true creek. The channel is now

169 Environmental Science Associates. *Biological Assessment – Port of San Francisco Regional General Permit for Shoreline Maintenance Repair, Rehabilitation, and Replacement Activities*, April 2015.

170 Environmental Science Associates, *The 34th America's Cup and James R. Hermon Cruise Terminal and Northeast Wharf Plaza Biological Assessment*, December 2011.

171 Coast Ridge Ecology, *Port of San Francisco Regional General Permit Wetland Delineation*, December 2015.

172 Caltrans, *Islais Creek Bridge Rehabilitation Project Biological Assessment. 04-SF-0-CR, 34C0024, Federal Project No. BRLO-5934 (168)*, March 2017.

173 Caltrans, *Islais Creek Bridge Rehabilitation Project (Federally Funded Project), Natural Environment Study*, 2017.

174 Caltrans, Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish, Final Report, 2015.

175 Boudreau Associates, LLC, *SFPUC Southeast Bay Outfall Islais Creek Crossing Replacement Project Endangered Species and Essential Fish Habitat Biological Assessment*, September 2019.

176 Caltrans, 2017. ibid

an extension of the central San Francisco Bay and exhibits estuarine (brackish) hydrology and habitat.[177, 178]

Most of the channel is utilized by the Port of San Francisco and its tenants at various berths east of the Illinois Street Bridge, where depths have been continuously dredged to maintain depths greater than 35 feet below the mean lower low water line to accommodate larger vessel access. The Islais Creek Bridge and the Illinois Street Bridge are operable drawbridges located directly east of the project's proposed alignment across the Islais Creek Channel. The channel banks are stabilized by riprap and concrete. Currently, the channel width ranges from approximately 450 feet at its mouth to 150 feet (at the low water mark) at the most restrictive area under the Islais Creek Bridge. The average depth of the channel within the project area is approximately 30 feet below the mean lower low water line.

Open Water (Pelagic) Habitat

The open water environment (*pelagic zone*) of Islais Creek Channel is closely connected to central San Francisco Bay. Pelagic habitat is the predominant marine habitat in aquatic portions of the project area and includes the area between the water surface and the mudline elevation. The pelagic water column habitat is predominantly inhabited by fish, marine birds, marine mammals, and planktonic organisms that either float or swim in the water.

The open water habitat within Islais Creek Channel and Islais Creek Estuary is listed by the San Francisco Bay Regional Water Quality Control Board as an impaired water body on the 303(d) list for ammonia, chlordane, dieldrin, hydrogen sulfide, polycyclic aromatic hydrocarbons, and toxicity.[179] Beneficial uses of Islais Creek tidal areas include commercial and recreational fishing, estuarine habitat, wildlife habitat, water contact recreation, water non-contact recreation, and navigation.[180]

Intertidal Habitats

Islais Creek Channel is hydrologically connected to San Francisco Bay and tidally influenced in connection with the bay. The project area includes intertidal habitats (areas between low and high tides) that consist of both natural and artificial rock (e.g. concrete and quarried riprap), concrete bulkheads, and a pile-supported floating dock. Riprap has been placed to protect numerous shoreline locations, including the shoreline of the project area, which provides artificial habitat for intertidal marine species.

Subtidal Habitats

Islais Creek Channel contains both soft sediment and hard substrate subtidal (below the low tide) habitat. Soft bottom substrate ranges between soft mud with high silt and clay content and areas of coarser sand. Islais Creek Channel was historically and is still currently dredged for accessibility and the routine

177 WillyWeather, San Francisco Bay-Islais Creek Channel Tide Times, *https://tides.willyweather.com/ca/san-francisco-county/san-francisco-bay--islais-creek.html*, accessed August 20, 2019.

178 National Oceanic and Atmospheric Administration, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, August 2007.

179 State Water Resources Control Board, 2016 California 303(d) List of Water Quality Limited Segments, *https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/2016_303d/category5_report.shtml*, accessed August 22, 2019.

180 San Francisco Regional Water Quality Control Board. 2010. *Final Staff Report: San Francisco Bay Basin Water Quality Control Plan*, Basin Plan Update, Addition of Water Bodies and Beneficial Uses, July 7, 2010, http://*waterboards.ca.gov/sanfranciscobay/basin_planning.html*, accessed August 22, 2019.

maintenance dredging of Islais Creek Channel for navigation has resulted in regular disturbance and redistribution of unconsolidated soft mud with high silt and clay content. The muddy-sand benthic community consists of a diverse polychaete worm community represented by several subsurface deposit feeding species, including a tube dwelling filter-feeding species (*Euchone limnicola*), a carnivorous Polychaete worm species (*Exogone loure*i), and the elongated bamboo worm (*Sabaco elongatus*), as well as several surface deposit feeding *Ameana* spp. persisting throughout the year.[181] A benthic community analysis of the western segment of Islais Creek Channel, including the project area, showed a *Relative Benthic Index* of 0.22; a relative benthic index of less than or equal to 0.3 is an indicator that pollutants or other factors are negatively impacting the benthic community.[182]

Hard substrate occurs along the banks of Islais Creek Channel where rock riprap and concrete are used to provide bank stabilization. In the intertidal and near subtidal zones, barnacles (*Balanus glandula, Amphibalanus amphitrite,* and *Amphibalanus improvisus*) are commonly present along with the Bay mussel (*Mytilus trossulus/galloprovincialis*), the invasive Asian mussel (*Musculista senhousia*), and the native Olympia oyster (*Ostrea lurida*). The most common large, mobile benthic invertebrate organisms include blackspotted shrimp (*Crangon nigromaculata*), the bay shrimp (*Crangon franciscorum*), Dungeness crab (*Metacarcinus magister*), and the slender rock crab (*Cancer gracilis*).

All submerged aquatic vegetation along the San Francisco shoreline is considered critical fish spawning habitat for Pacific herring.[183]

Tidal Waters and Wetland

Tidal wetlands occur in sparse narrow patches along the Islais Creek shoreline. These tidal wetlands primarily consist of pickleweed (*Salicornia pacifica*) mats and salt grass (*Distichlis spicata*) flats interspersed with additional wetland species such as coastal gumweed (*Grindelia stricta*), fat-hen (*Atriplex prostrata*), and alkali Russian thistle (*Salsola soda*). Within and adjacent to the project site, tidal wetlands containing pickleweed mats occur in narrow bands and patches (approximately 5 to 15 feet wide) along the northern and southern shoreline, including in the Islais Creek Park staging area, west of the Islais Creek Bridge and along the northern shoreline just east of Tulare Park. Tidal wetland habitat comprises approximately 820 square feet (0.019 acre) of the proposed project work area in Islais Creek Park. This wetland habitat contains pickleweed mats growing in disturbed conditions within concrete rubble and debris along the shoreline. No other tidal wetlands occur within the project site or the proposed staging areas.[184] [185]

Terrestrial Habitat

The terrestrial portion of the project area consists of developed areas and ruderal habitat, including isolated landscaped recreational areas and industrial uses. The proposed project work areas adjacent to Islais Creek Channel are located within landscaped parks, Islais Creek Park and Tulare Park, both of which are

181 Ibid.

182 State Water Resources Control Board, *Consolidated Toxic Hot Spots Cleanup Plan*; Volume II Regional Cleanup Plans, 1999.

183 The Magnuson-Stevens Act defines "essential fish habitat" as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

184 Caltrans, *Islais Creek Bridge Rehabilitation Project (Federally Funded Project), Natural Environment Study*, 2017.

185 Coast Ridge Ecology, *Port of San Francisco Regional General Permit Wetland Delineation,* December 2015.

relatively small isolated parks surrounded by industrial use. Both parks contain some ornamental trees and shrubs, which may provide nesting habitat for birds acclimated to activity in urbanized environments. Other project areas, such as the proposed staging areas, contain developed/paved parcels and/or ruderal habitat that are subject to repeated or profound disturbance. Such areas support weedy, opportunistic plant species that easily colonize disturbed areas.

Wildlife Movement and Migration Corridors

The adjacent San Francisco Bay serves as a migration corridor for anadromous fish between the Pacific Ocean and spawning habitat, which occurs primarily within the Sacramento and San Joaquin River watersheds, but also in a handful of smaller tributaries to the San Francisco Bay. Islais Creek is not one of the tributaries considered to be a migratory corridor, and although Islais Creek is connected to the San Francisco Bay, the project site is located approximately 0.7 mile west of the mouth of Islais Creek where it connects to the bay. As such, Islais Creek is not directly within the migration routes normally taken by anadromous fish species.

The San Francisco Bay is also an important stopover for migratory shorebirds along the Pacific Flyway[186]. Open water within the bay provides congregation and foraging habitat for shorebirds, while larger stands of wetland vegetation also provide roosting habitat. Narrow bands of tidal wetland vegetation exist along the bank of the Islais Creek Channel, which are too small and fragmented to provide roosting habitat for migratory shorebirds. The Pier 94 wetland, located approximately 500 feet away from the potential Pier 94 staging area, provides the nearest roosting habitat for shorebirds. The project area is not considered to be a wildlife movement corridor for other terrestrial species. Most of the terrestrial project area is urban and industrial without suitable habitat for wildlife. The few remaining vegetated areas are fragmented and highly disturbed.

Special-Status Marine Wildlife

A review of the CNDDB and USFWS databases identified special-status wildlife species with the potential to occur in the vicinity of the project area. A table describing these identified special-status species, their habitats, and their likelihoods of occurrence are provided in **Appendix B**. Species with potential to occur in the project area are discussed in further detail below.

Chinook Salmon

Although the potential for Chinook salmon (*Oncorhynchus tshawytscha*) to occur in the San Francisco Bay is variable depending on the season, this species has low potential to occur in the vicinity of the project site from June through November when in-water work would occur for the proposed project. The Chinook salmon that inhabit San Francisco Bay include three distinct races: Sacramento River winter-run, Central Valley spring-run, and Central Valley fall/late fall-run.[187] Sacramento River winter-run Chinook salmon, which is federally and state-listed as endangered, migrate through San Francisco Bay from December

[186] Stenzel, L.E., C. M. Hickey, J. E. Kjelmyr, and G. W, Abundance and Distribution of Shorebirds in the San Francisco Area, *Western Birds*, 2002.

[187] These races are referred to as *evolutionarily significant units*.

through July with a peak in March.[188] Central Valley spring-run Chinook salmon, which is federally and state-listed as threatened, migrate through the San Francisco Bay from November through July, with a peak in April and May. During these migration periods, fish forage in shallow water areas (less than 30 feet), such as within the project area. However, potential for these species to be present during in-water construction of the proposed project is low as they as they primarily inhabit upstream freshwater habitats from July through November.

Central Valley fall/late fall-run Chinook salmon, which is a California species of special concern, is the only race that spawns in San Francisco Bay tributary streams. The project site is west of the San Francisco Bay migratory route between the Pacific Ocean and spawning habitat in the Central Valley, and individuals could potentially forage, rest, or pass through the project area. However, Central Valley fall/late fall-run individuals have rarely been documented within the project area or the immediate vicinity. Any occurrence would only be temporary as the surrounding channel and adjacent bay habitat is primarily utilized only for migratory purposes.[189]

Steelhead

The California Central Valley and Central California Coast steelhead (*Oncorhynchus mykiss*) *distinct population segments*[190], both of which are federally threatened, migrate through the San Francisco Bay during the winter and spring months. Although the potential for steelhead to occur in the San Francisco Bay is highly variable throughout the year, from June through November (when in-water work would occur for the proposed project), both the California Central Valley and Central California Coast steelhead have low potential to occur in the vicinity of the project site. Central Valley steelhead rarely occur south of the San Francisco Bay Bridge, and as such, are not expected to occur within the project area during any time of year. Central Coast steelhead are known to occur within multiple San Francisco Bay streams; however, they are unlikely to occur within the project area at any time of year because Islais Creek Channel does not provide suitable habitat for spawning. The nearest watershed that supports Central Coast steelhead is the San Mateo Creek watershed, which empties into San Francisco Bay roughly 10 miles south of the project area.[191] During migration between the Pacific Ocean and the San Mateo Creek watershed within the winter and spring months, steelhead travel through the open waters of San Francisco Bay adjacent to Islais Creek Channel. They are suspected to forage in shallow water areas (less than 30 feet), such as within the project site; however, they would only be expected to occur in these areas during in-migration and out-migration transits and not during in-water construction of the proposed project.

Green Sturgeon

The federally threatened, southern distinct population segment of North American green sturgeon (*Acipenser medirostris*) has the potential to be present throughout all marine portions of the project area at any time of the year, however; their preferred migration routes suggest a low likelihood for presence. The

189 Interagency Ecological Program for the San Francisco Bay Estuary; San Francisco Bay Study, 2010-2014, 2014. Unpublished Raw Mid-water and Otter Trawl Data.

190 Within California, steelhead are subdivided into "distinct population segments" based on their life history.

191 Leidy, R.A., G.S. Becker, B.N. Harvey, *Historical distribution and current status of steelhead/rainbow trout (Oncorhynchus mykiss) in streams of the San Francisco Estuary, California*, 2005.

upper Sacramento River has been identified as the only known spawning habitat for green sturgeon in the southern distinct population segment.[192] According to recent studies, green sturgeon adults begin moving upstream through the San Francisco Bay during the winter.[193] Tagged adults and subadults within the San Francisco Bay-Delta have been observed occupying waters at shallow depths of less than 33 feet, either swimming near the surface or foraging along the bottom. Green sturgeon migrating between the Pacific Ocean and spawning habitat in the Sacramento River watershed rarely travel south of the San Francisco–Oakland Bay Bridge. Typically, adults take a more direct route from San Pablo Bay, passing through Raccoon Strait adjacent to Angel Island (approximately 10 miles north of the project area), and out to the Pacific Ocean.[194] As such, potential for green sturgeon to be present in the project area is considered to be low.

Longfin Smelt

Longfin smelt (*Spirinchus thaleichthys*), which is listed as state threatened and federal candidate species, is primarily present in central San Francisco Bay during the late summer months before migrating upstream in fall and winter. Longfin smelt adults seasonally occur within south San Francisco Bay but are generally more concentrated in Suisun, San Pablo, and north San Francisco bays.[195] Although longfin smelt distribution within the estuary and within the Islais Creek Channel is driven by fluctuations in salinity and they are less likely to occur within the project area outside of late summer, their exact distribution pattern varies from year to year. As such, longfin smelt have a moderate potential to be present in bay habitat adjacent to the site and in Islais Creek Channel at any time of the year.

Pacific Herring

The San Francisco Bay Pacific herring (*Clupea pallasii*) population is a California Department of Fish and Wildlife (CDFW)-managed fishery[196] and the species is protected within San Francisco Bay under the Marine Life Management Act.[197] This species is known to spawn along the San Francisco waterfront and attach its egg masses to eelgrass, seaweed, and hard substrates such as riprap, pilings, breakwater rubble, and other "hard surfaces." Spawning usually takes place between October and March with a peak between December and February. After hatching, juvenile herring typically congregate in San Francisco Bay during the summer and move into deeper waters in the fall. CDFW reported herring spawning within Islais Creek Channel during the 2014-2015 and 2015-2016 spawning seasons.[198] Islais Creek Channel has been identified as a herring spawning location; therefore, the species' potential to occur in the project area is high between

192 Moyle, P.B, Inland Fishes of California, University of California Press, Berkeley and Los Angeles, CA. 2002.

193 Kelly, J.T, A.P Klimley, and C.E. Crocker. Movements of green sturgeon, *Acipenser medirostris*, in the San Francisco Bay Estuary, 2007.

194 Kelly, J.T, A.P Klimley, and C.E. Crocker. Movements of green sturgeon, *Acipenser medirostris*, in the San Francisco Bay Estuary, 2007.

195 Merz, J. E., P. S. Bergman, J. F. Melgo, and S. Hamilton, *Longfin Smelt: Spatial Dynamics and Ontogeny in the San Francisco Estuary*, California, 2013.

196 The California Department of Fish and Wildlife has managed the commercial Pacific Herring sac-roe fishery in California since the first opening in 1972. This species is considered a managed species by CDFW. *https://www.wildlife.ca.gov/Fishing/Commercial/Herring,* accessed August 2019.

197 The Marine Life Management Act provides guidance, in the form of fisheries management plans, for the sustainable management of California's fisheries.

198 CDFW, Summary of the 2014- 2015 and 2015-2016 Pacific Herring Spawning Population and Commercial Fisheries in San Francisco Bay. *https://www.wildlife.ca.gov/Fishing/Commercial/Herring/Season-Summaries,* accessed February 2019.

October and March; however, the likelihood that they would be present in the project area is low outside the spawning season.

Marine Mammals

In general, the presence of marine mammals in San Francisco Bay is related to distribution and presence of prey species and foraging habitat. Pacific harbor seals (*Phoca vitulina richardsi*), California sea lions (*Zalophus californianus*), and harbor porpoises (*Phocoena phocoena*) are found year-round within San Francisco Bay and are the marine mammal species most likely to occur in the project area. Other marine mammal species that have occasionally been seen in San Francisco Bay include the gray whale (*Eschrichtius robustus*), the humpback whale (*Megaptera novaeangliae*), the bottlenose dolphin (*Tursiops truncates*), and the northern elephant seal (*Mirounga angustirostris*.L). Less frequently, the Guadalupe fur seal (*Arctocephalus townsendi*) and the northern fur seal (*Callorhinus ursinus*) have also been observed.[199]

Pacific harbor seals and California sea lions both use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding.[200] California sea lions are noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest; however, there are no known haul-out locations in the project area. California sea lions and harbor seals have been observed in the Islais Creek Channel, however, there are no documented sightings of harbor seals or Pacific sea lions using Islais Landing as a haul-out site. Due to the lack of known haul-out locations in the project area, the presence of these species in the project area is likely to be confined to a few individuals temporarily present in the creek and not the large numbers seen elsewhere within San Francisco Bay. Nonetheless, both California sea lions and harbor seals have a moderate to high potential to traverse and/or forage in the project area.

Special-Status Avian and Terrestrial Wildlife

Resident and Migratory Birds

Several mature street trees and shrubs occur within the project area which could provide nesting and foraging habitat for resident and migratory birds, which are protected by the Migratory Bird Treaty Act and Fish and Game Code.[201] Raptors are not expected to nest near the project site due to the lack of foraging and nesting habitat, but trees located in Islais Creek Park and Tulare Park could support nesting by a few common passerine bird species, such as Anna's hummingbird (*Calypte anna*) and northern mockingbird (*Mimus polyglottos*).

Islais Creek Channel, along with the rest of the San Francisco Bay, serves as an important wintering and stop-over site for migratory birds on the Pacific Flyway. More than 300,000 wintering birds are estimated to use the San Francisco Bay and associated ponds.[202] Seabirds that regularly utilize the marine habitat near

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199 Caltrans, San Francisco-Oakland Bay Bridge East Span Seismic Safety Project, Pier E3 Demonstration Project Biological Monitoring Programs, October 2015.

200 National Oceanic and Atmospheric Administration, *Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay*, August 2007.

201 The Federal Migratory Bird Treaty Act and section 3503 of the California Fish and Game Code protect most native migratory birds and breeding birds that could occur at the proposed project site or nest in the surrounding vicinity.

202 National Oceanic and Atmospheric Administration, Report on the Subtidal Habitats and Associated Biological Taxa in San Francisco Bay, June 2007.

San Francisco Bay include the Caspian tern (*Hydroprogne caspia*), the Forster's tern (*Sterna forsteri*), the California least tern (*Sternula antillarum*), cormorants (*Phalacrocorax* spp.), the western gull, (*Larus occidentalis*), the herring gull (*L. argentatus*), the mew gull (*L. canus*) and the California brown pelican (*Pelecanus occidentalis*). Among migratory birds, diving ducks are the most abundant group that overwinter in the San Francisco Bay. Within this group, the canvasback (*Aythya valisineria*), the greater scaup (*A. marila*), the lesser scaup (*A. affinis*), and the surf scoter (*Melanitta perspicillata*) are the most common.[203]

Urban and industrial development has limited the habitat availability for migratory birds along the banks of the Islais Creek Channel. Due to dredging and channel formation, shoreline habitat at the creek bank is limited to large boulder riprap, which supports minimal avian foraging habitat. Small bands of tidal wetland vegetation have been identified along the riprap on the creek bank, but these wetlands are too small and fragmented to provide significant habitat for birds. Though the developed creek bank provides fewer habitat opportunities than comparable undeveloped shoreline areas, the open water habitat within the Islais Creek Channel is regularly utilized by migratory seabirds for floating and foraging.

Terrestrial Wildlife

The terrestrial portions of the project area are surrounded by industrial and urban development. These areas include two small isolated urban parks that are landscaped with ornamental and non-native vegetation and heavily disturbed or developed industrial parcels that are largely devoid of vegetation. There is no suitable habitat for terrestrial special-status species within the project area, and no occurrences of terrestrial special-status species have been documented within the project area (CDFW, 2018).

Special-Status Plants

To determine potential for special-status plants[204] to occur in the project vicinity, a review of CNDDB and California Native Plant Society databases was performed. A table describing these identified special-status species, their habitats, and their likelihoods of occurrence are provided in **Appendix C**. No special-status plants are expected to occur in the project area due to poor substrate quality, industrial land uses, and abundance of non-native plant species. No suitable habitat for special-status plants was identified during a habitat assessment conducted on February 21, 2019. No occurrences of terrestrial special-status plants have been documented within the project area (CDFW, 2018).

Impact BI-1: Project construction would not have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Less than Significant with Mitigation)

Construction of the proposed project would primarily occur within marine habitat in the Islais Creek Channel, with some modification and use of nearby terrestrial areas, such as Islais Creek Park, Tulare Park,

203 Ibid.

204 Special-status plants that were evaluated included species with the following listing statuses/designations:
- Endangered or threatened under the Federal Endangered Species Act
- Endangered, threatened, or candidate for endangered listing status under the California Endangered Species Act
- Rare under the California Native Plant Protection Act
- Ranks 1 and 2 under the California Native Plant Society Rare Plant Ranking system

Pier 80, Third Street, and various staging areas. Potential impacts to special-status species and their habitats are presented below.

Marine Species

Overview

Because the proposed project primarily involves construction within the Islais Creek Channel, the majority of special-status species that could be affected by the proposed project are marine species, such as fishes and marine mammals. These construction activities could result in impacts that would adversely affect marine species if they are present in the project area during construction. As described above and in Section A, Project Description, in-channel work would occur only from June through November. During this work window, the potential for chinook salmon and steelhead to occur in the project area is unlikely because it is outside the migratory periods when these species are expected to be in San Francisco Bay. This work window would also avoid the Pacific herring spawning season (December – March), when they would be expected to inhabit areas along the waterfront such as the project area, thereby avoiding impacts on Pacific herring. Furthermore, although green sturgeon may be present in the marine portions of the bay year-round, the species is considered to have low likelihood to occur in the project area because it is located roughly 10 miles south of their known migratory route. As such, impacts to chinook salmon, steelhead, Pacific herring, and green sturgeon are not expected to result from the project and impacts to these species would be less than significant. Nonetheless, the project could result in potentially significant impacts to other special-status marine species, including longfin smelt and marine mammals. In-water construction activities that have the potential to affect marine species include:

- Pile driving for cofferdam sheet pile installation and support pile installation
- Staging of cofferdams
- Sediment excavation
- Dewatering of water from the cofferdam

These activities could result in construction noise effects to species and alteration of marine habitat through the resuspension of sediments, mobilization of chemicals of concern, and temporary removal of habitat during construction. The impacts associated with each potential effect on longfin smelt and marine mammals are described in further detail below.

Construction Noise Effects

As described in Section A, Project Description, the proposed project involves installation of 18- and 60-inch-diameter piles as well as cofferdam sheet pile walls below the mudline. To minimize noise and vibration impacts, holes would be pre-drilled to a depth of approximately 30 feet and piles and sheet piles would be inserted into pre-drilled holes. The piles and sheet piles would then achieve the appropriate depth primarily through a combination of gravitational pull from the weight of the pile against the channel bottom, use of a vibratory driver, pile oscillation, and/or pile rotation. Use of an impact hammer would be minimized to the extent feasible, but limited use may be required depending on specific substrate compositions encountered at certain depths. A vibratory driver would be used to remove temporary

features, such as the cofferdam sheet pile walls and anchor piles (if oscillation or rotation methods are used).

Pile driving in aquatic environments or in dry areas adjacent to aquatic environments (i.e., shoreline and within cofferdams) can produce high-intensity noise and, if fish or marine mammals are nearby, can result in injury and/or disruption of behavior of these individuals. The extent of noise impacts to fish and marine mammals depends on the specific methods of pile installation used and other project-specific conditions. To provide context for the underwater noise analysis and modeling, a discussion of noise generation concepts and noise generation levels in underwater conditions is provided for each of the proposed pile installation methods below. Because the driving of piles on land along the shoreline and within dewatered cofferdams can also generate underwater noise, underwater sound impacts associated with these activities are also described below. Representative results from underwater noise modeling conducted at the project site are then presented, followed by a discussion of potential adverse impacts to fish and marine mammals in relation to the potential underwater noise generated by these activities.

Pile Driving and Installation in Underwater Conditions

Pre-Drilling, Pile Oscillation, and Pile Rotation. As described in Section A, Project Description, pre-drilling to a depth of 30 feet below the channel bottom would occur for the majority of the piles (including sheet piles). After insertion of the pile into the predrilled holes, pile oscillation and/or pile rotation methods may be used to install piles to their desired depths. Available data currently indicates that the sound levels generated by small-scale underwater drilling, oscillation, or rotation operations would be similar to the sound level expected to be generated by vibratory driving (described below) for a pile with an equivalent diameter. [205] Accordingly, the sound analyses for drilling, oscillation, and rotation assume that source sound levels are similar to those produced by vibratory driving. Although the source sound levels are similar to those produced by vibratory driving, it is important to note that other variables contribute to the extents (or distances) these sound levels can reach. Pre-drilling and installation of piles through oscillation and/or rotation are typically slower processes and take longer to complete than vibratory driving. Therefore, the sound impact distance during pre-drilling, pile oscillation, and pile rotation may be greater than that of vibratory driving as a result of the longer duration of the pile installation.

Vibratory Driver. After the piles are inserted into pre-drilled holes, a vibratory driver may be used to install piles to their desired depths. A vibratory driver works by inducting particle motion to the substrate immediately below and around the pile causing liquefaction of the immediately adjacent sediment, thereby allowing the pile to sink downward or be removed. Vibratory pile driving is only suitable where soft substrate is present. Sound levels are typically 10 to 20 dB lower in intensity relative to the higher, pulse-type noise produced by an impact hammer (described below).[206]

Impact Hammer. As described above, use of an impact hammer to install piles and sheet piles would be minimized to the extent feasible; however, limited use of an impact hammer may be required in the event

[205] Caltrans, *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish*, Final Report, November 2015.

[206] Caltrans, Technical guidance for assessment and mitigation of the hydroacoustic effects of pile driving on fish, Final Report, 2015.

oscillation, rotation, and vibratory methods are not sufficient to reach the desired pile depths. The striking of a pile by an impact hammer in water creates a pulse of sound that propagates through the pile, radiating out through the water column, seafloor, and air. Sound pressure pulses, as a function of time are referred to as a waveform. Peak waveform pressure underwater is typically expressed in decibels (dB) referenced to 1 microPascal (μPa). Sound levels are generally reported as peak levels (peak), root-mean-square pressure (RMS), and sound exposure levels (SEL). In addition to the pressure pulse of the waveform, the frequency of the sound, expressed in Hertz (Hz) is also important to evaluating the potential for sound impacts.

Pile Driving and Installation in Dry Conditions

Pile Driving within Cofferdam. Little data exists for the extent of noise reduction for piles installed within dewatered cofferdams; however, the physical isolation of the pile from the water column would provide decoupling action similar to that of a bubble curtain within the water column. As such, for the purposes of this analysis, it is assumed that pile driving within a dewatered cofferdam would provide noise reduction levels similar to that of a bubble curtain. Bubble curtain systems are often applied to reduce underwater sound produced by piles driven in water. The effectiveness of a bubble curtain system in reducing underwater sound can vary significantly depending on project logistics, system design, and operation. Caltrans indicates that a properly operating bubble curtain system can provide 5 to 20 dB of noise reduction.[207] Therefore, the following analysis assumes that pile driving within a dewatered cofferdam is expected to provide similar attenuation of sound impacts.[208]

Shoreline Pile Driving. The proposed project would involve piles driven on the creek shoreline within approximately 30 feet of the channel mean high water line. Caltrans recommends that piles driven within 200 feet of the water be evaluated for underwater effects to fish because piles driven on land proximate to water can result in underwater noise generation.[209] Available data suggest that in most cases underwater noise levels generated by piles on land are lower than underwater noise levels for piles driven directly in the water. This is primarily related to the decoupling of the pile surface from the water. There can, however, be situations where the ground adjacent to a waterbody is highly saturated. In this case, piles driven on land can produce sound levels that are equivalent to the pile being driven in water. For the purposes of this analysis, it is assumed that piles driven within 10 feet of the mean high-water line are equivalent to being driven in the water and no reduction in sound levels is assumed for these piles. However, for those piles that are driven between 10 to 20 feet of the mean high-water line, a 3-dB noise reduction is applied to account for natural attenuation associated with the land mass between the pile and the water column. A 5-dB reduction is applied for piles located more than 20 feet from the mean high-water line due to the greater distance and associated increased attenuation of the land mass.

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207 Ibid.

208 Use of a cofferdam for construction of the proposed project does not allow for use of a bubble curtain as a noise-attenuating method because it results in limited space and maneuverability surrounding the cofferdam.

209 Caltrans, *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish*, Final Report, November 2015.

Underwater Noise Model

Because the extent of noise impacts to fish and marine mammals depends on the specific methods of pile installation and project-specific conditions, a noise modeling and hydroacoustic analysis was performed for the proposed project. This analysis provided representative sound levels at varying distances from piles.[210] Although sound levels may be reported as peak, RMS, and SEL, for the purposes of the discussion below, SEL is used to discuss threshold criteria and impacts. Installation of piles within the cofferdam and on land at distances greater than 10 feet above the mean high-water elevation attenuates resulting sound impacts and reduces the distance to which harmful sound levels travel. Because noise thresholds and impacts differ for fish and marine mammals, the modeled noise level results along with impact threshold criteria are presented by marine species type below.

Fish Noise Threshold Criteria

Pre-Drilling, Oscillation/Rotation, and Vibratory Driving. No threshold criteria for drilling, oscillation, rotation, and vibratory pile driving exist for fish at this time. Vibratory pile driving is used as an avoidance and minimization measure to reduce noise effects to fish from impact pile driving and is not considered to result in potential injury to fish. Similar reasoning can be applied to pre-drilling, oscillation, and rotation for pile installation, which exhibits similar source sound levels as vibratory pile driving.

Impact Hammer. When underwater noise is generated, nearby fish may experience damage to the soft tissues, such as gas bladders or eyes (barotraumas) and/or result in harassment of fish such that they alter swimming, sleeping, or foraging behavior or temporarily abandon forage habitat. The extent of impacts to fish depends upon specific sound levels generated. Scientific investigations on the potential effect of noise on fish indicate that sound levels below 183 dB SEL do not appear to result in any acute physical damage or mortality to fish of any size.[211] The Fisheries Hydroacoustic Working Group[212] established threshold criteria to determine the effects of high-intensity sound on fish. While these criteria are not regulatory requirements, they are generally accepted by resource agencies such as National Marine Fisheries Service (NMFS) as viable criteria for underwater noise effects on fish.

The established threshold criteria for impact hammer (impulse-type) noise to harm fish have been set and applicable thresholds are 187 dB accumulated SEL for fish over 2 grams and 183 dB SEL for fish less than 2 grams, as shown in Table 15. The state-listed longfin smelt size ranges are smaller (less than 2 grams) and therefore the 183 dB SEL criterion is applicable for this species within the project area.

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210 ICF, *Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum*, July 2020.

211 Dalen, J. and G.M. Knutsen, Scaring effects of fish and harmful effects on eggs, larvae and fry from offshore seismic explorations, 1986.

212 The Fisheries Hydroacoustic Working Group includes members from the Southwest and Northwest Divisions of the National Marine Fisheries Service; California, Washington, and Oregon Departments of Transportation, California Department of Fish and Wildlife, and the U.S. Federal Highway Administration.

TABLE 15: POTENTIAL EFFECTS TO FISH AT VARYING NOISE LEVELS (IMPACT THRESHOLD CRITERIA)

Taxa (Fish)	Sound Level (dB)	Effect	Reference
All fish > 2 grams in size	187 (SEL)	Acute Barotraumas	Fisheries Hydroacoustic Working Group, 2008
All fish < 2grams	183 (SEL)	Acute Barotraumas	Fisheries Hydroacoustic Working Group, 2008

Source:
ICF, *Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum*, July 2020.

Impacts on Special-Status Fish

The proposed project has been designed to minimize potential impacts on special-status fish species by restricting in-water construction activities to the National Oceanic and Atmospheric Administration (NOAA)-approved environmental work window (June – November) when most special-status fish species are least likely to be present in the project area.[213] The proposed work window would avoid the peak migration periods for Chinook salmon and steelhead and entirely avoid the Pacific herring migration season, thereby reducing or avoiding impacts to these species. This work window was established by the Army Corps and U.S. EPA through consultation with NMFS to avoid or minimize potential environmental impacts from construction activities to listed aquatic species and formalized in a programmatic biological opinion.[214] Furthermore, green sturgeon is considered to have low likelihood to occur in the project area because it is located roughly 10 miles south of their known migratory route. As such, impacts to chinook salmon, steelhead, Pacific herring, and green sturgeon are not expected to result from the project and impacts to these species would be less than significant. Nonetheless, as discussed above, longfin smelt has moderate potential to occur at the project site year-round, including when in-water construction is proposed. Potential impacts to this species based on modeled results are described below.

The proposed project's noise modeling results accounted for project-specific conditions, including noise attenuation from piles driven on the shoreline and within the cofferdams. For the purposes of assessing impacts to longfin smelt, the modeling approach reviewed only the use of an impact hammer against fish threshold criteria. Table 16 presents a summary of distances within which impact hammering associated with the proposed project could exceed criteria threshold for longfin smelt (183 dB SEL). As stated above, sound levels from drilling, oscillation, rotation, and vibratory driving do not exceed criteria for fish and, therefore, are not considered for potential injury to fish.

213 U.S. Army Corps of Engineers, Long-term management strategy for the placement of dredged material in the San Francisco Bay region. Management Plan, 2001.

214 Ibid.

TABLE 16. REPRESENTATIVE MODELED EXTENTS/DISTANCES FOR IMPACT DRIVEN SOUND PRESSURE LEVELS TO REACH THRESHOLDS FOR LONGFIN SMELT BY PILE TYPE

Pile Size/Type	Project Location	Approximate Distance or Range from Impact Pile to Attenuate to Criteria for Longfin Smelt – 183 dB SEL (feet)*
60-inch-diameter piles	Along southern shoreline (in cofferdam)	490
	Along northern shoreline (in cofferdam)	275
18-inch-diameter piles	Along northern shoreline (in cofferdam)	85
18 inch (concrete)	Kayak dock (in water)	CNE
Sheet piles	Along shorelines and within channel	605
Anchor pile	Along shorelines (in cofferdam)	150

Note:
CNE - criteria not exceeded beyond approximately 33 feet from pile
* Estimated distances presented for fish criteria were conservatively based on no pre-drilling for these piles. If pre-drilling is preformed the distances would be even lower.

These impacts would be significant if longfin smelt were to occur within the buffer distances shown in Table 16 at the time of impact pile driving (e.g. if special-status fish were present within 605 feet of cofferdam sheet pile installation or within 275 feet of installation of 60-inch-diameter piles along the northern shoreline). Noise impacts from impact pile driving on special-status fish species would be reduced to less than significant with implementation of **Mitigation Measure M-BI-1, Noise Reduction and Monitoring to Protect Fish and Marine Mammals during Pile Driving,** which requires implementation of noise reduction practices approved by NMFS and CDFW. These measures could include "soft start" techniques, the use of cushion blocks, or other sound attenuation methods demonstrated to reduce sound levels. The proposed mitigation would result in startle responses such that fish would avoid the area where pile driving is occurring and reduce sound levels from pile driving. Furthermore, pile-driving activities would only occur during established work windows when the majority of special-status fish species are least likely to be present. As a result, the impact on fish species from pile driving would be less than significant with mitigation.

Marine Mammal Noise Threshold Criteria

Marine mammals, including pinnipeds such as Pacific harbor seals and California sea lions and cetaceans such as harbor porpoises, have the potential to temporarily occur in the project area during construction. The sound generated by pile driving could disrupt marine mammal behavior at relatively distant ranges and has the potential to induce hearing impairment at close range.[215] NMFS defines harassment as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment) or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption to behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment)."

As summarized in Table 17, the NMFS thresholds for Level A harassment vary depending on species and the type of driving. For impact driving the thresholds are in the range of 155 dB to 203 dB. For vibratory driving they are in the range of 173 to 219 dB.

215 Dahl, P.H. et al, *The Underwater Sound Field from Impact Pile Driving and Its Potential Effects on Marine Life,* Acoustics Today, vol. 11, issue 2, Spring 2015.

TABLE 17. NMFS-ADOPTED LEVEL A PILE-DRIVING ACOUSTIC THRESHOLD CRITERIA FOR MARINE MAMMALS

Species	Marine Mammal Hearing Group	Cumulative SEL (dB)	
		Impact	Vibratory[1]
Cetaceans	Low-Frequency (Cetaceans)	183	199
	Mid-Frequency (Bottlenose dolphin)	185	198
	High-Frequency (Harbor porpoise)	155	173
Pinnipeds	Phocid (Pacific harbor seal)	185	201
	Otariid (California sea lion)	203	219

Source:
NOAA, Technical Guidance for Assessing Effects of Anthropogenic Sound on Marine Mammal Hearing, 2016.
Note:
[1] Drilling, oscillation, and rotation are considered to be the same as or similar to vibratory threshold criteria.

For the purposes of assessing whether the proposed project could result in substantial adverse impacts to species under CEQA, only Level A harassment threshold criteria are evaluated below.

Impacts on Marine Mammals

Haul-out locations for pinnipeds such as the California sea lion and Pacific harbor seal are not present in the waters near the project site or the proposed staging areas; therefore, the presence of pinnipeds is likely to be confined to a few individuals and not the large numbers seen elsewhere within San Francisco Bay. Over the last few years, increasing numbers of harbor porpoise have been observed within San Francisco Bay. The Golden Gate Cetacean Research team, which monitors populations of this species in the Bay Area, has reported more than 100 porpoises entering San Francisco Bay at one time.[216] Reported sightings are concentrated in the vicinity of the Golden Gate Bridge and Angel Island, with lesser numbers sighted south of Alcatraz and west of Treasure Island.[217] While the potential for marine mammals to occur in the area during pile driving activities is low, the proposed project impact on marine mammals would be significant if a marine mammal were to occur in or near the project area at the time of pile driving. Because the appropriate pile-installation method depends on site-specific conditions, the hydroacoustic analysis modeled noise generated by all potential pile-installation options, including drilling, oscillation and rotation, vibratory driver, and impact hammer (for drilling, oscillation, and rotation, source sound levels and durations are the same). Table 18, Table 20, and Table 20, p. 153, provide distances within which construction noise levels could exceed thresholds for marine mammals, as presented in Table 17, using a vibratory driver; drilling, oscillation, and rotation; and impact hammer, respectively.

216 Golden Gate Cetacean Research, Field Studies of Porpoises, Dolphins, and Whales in San Francisco Bay and on the Coast of Northern California – Harbor Porpoise Project, 2017, *http://www.ggcetacean.org/Harbor_Porpoise.html*, accessed August 2019.

217 AECOM, Application for Incidental Harassment Authorization for Marine Mammals: Central Bay Operations and Maintenance Facility Project, June 8, 2017.

TABLE 18. EXTENTS/DISTANCES FOR VIBRATORY PILE DRIVING SOUND PRESSURE LEVELS TO REACH LEVEL A CRITERIA LEVELS FOR MARINE MAMMALS BY PILE TYPE

		Approximate Distance to Cumulative SEL Marine Mammal Thresholds (feet)		
Pile Size/Type	Project Location	High-Frequency Cetaceans (harbor porpoise) – 173 dB	Phocid Pinnipeds (Pacific harbor seal) – 201 dB	Otariid Pinnipeds (California sea lion) – 219 dB
60 inch	Along northern shoreline (in cofferdam)	25	10	0
	Along southern shoreline (in cofferdam)	10	5	0
18 inch	Along northern shoreline and mid-channel (in cofferdam)	15	5	0
Sheet pile	Along shorelines and within channel (in water)	150	65	5
Anchor pile	Along shorelines (in cofferdam)	20	10	0

Source:

ICF. *Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum*. July 2020.

TABLE 19. EXTENTS/DISTANCES FOR DRILLING, OSCILLATION, AND ROTATION SOUND PRESSURE LEVELS TO REACH LEVEL A CRITERIA LEVELS FOR MARINE MAMMALS BY PILE TYPE

		Approximate Distance to Cumulative SEL Marine Mammal Thresholds (feet)		
Pile Size/Type	Project Location	High-Frequency Cetaceans (harbor porpoise) – 173 dB[1]	Phocid Pinnipeds (Pacific harbor seal) – 201 dB[1]	Otariid Pinnipeds (California sea lion) – 219 dB[1]
60 inch	Along northern shoreline (in cofferdam)	30 - 90	20 - 55	0 - 5
	Along southern shoreline (in cofferdam)	30	20	0
18 inch	Along northern shoreline	15	10	0
Sheet pile	Along shorelines and within channel (in water)	15 - 30	5 - 20	0

Source:

ICF. *Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum*. July 2020.

Note:

[1]Some distances are reflected as ranges to account of variations in site-specific conditions that create variations in modeling results.

TABLE 20. EXTENTS/DISTANCES FOR IMPACT PILE DRIVING SOUND PRESSURE LEVELS TO REACH LEVEL A CRITERIA LEVELS FOR MARINE MAMMALS BY PILE TYPE

		Approximate Distance to Cumulative SEL Marine Mammal Thresholds (feet)		
Pile Size/Type	Project Location	High-Frequency Cetaceans (harbor porpoise) – 155 dB	Phocid Pinnipeds (Pacific harbor seal) – 185 dB	Otariid Pinnipeds (California sea lion) – 203 dB
60 inch	Along northern shoreline (in cofferdam)	325	150	10
	Along southern shoreline (in cofferdam)	580	260	20
18 inch	Along northern shoreline (in cofferdam)	100	40	5
18 inch (concrete)	Kayak dock (in water)	15	10	0
Sheet pile	Along shorelines and within channel (in water)	720	325	25
Anchor pile	Along shorelines (in cofferdam)	180	80	10

Source:

ICF. *Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum*. July 2020.

The noise impacts on marine mammals would result in physical injury (Level A harassment), such as hearing impairment, and would be significant if a marine mammal occurred within the range where noise levels exceed thresholds, as presented in Table 18, p. 152, Table 20, p. 152, and Table 20. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure M-BI-1**, **Noise Reduction and Monitoring to Protect Fish and Marine Mammals during Pile Driving**. For example, the sound monitoring plan would describe a process for establishing Level A marine mammal safety zones based on the estimated distances where thresholds are exceeded. A biological monitor with halt-work authority during pile-driving activities would be onsite to monitor and survey for marine mammals entering the safety zones. The proposed mitigation would also reduce the maximum sound levels, result in startle responses such that marine mammals would avoid the area where pile driving is occurring, and protect individuals that enter the project area. As a result, the impact on marine mammals would be less than significant with mitigation.

Mitigation Measure M-BI-1: Noise Reduction and Monitoring to Protect Fish and Marine Mammals during Pile Driving

The avoidance and minimization measures specific to pile driving activities, below, have been developed in accordance with the majority of the measures outlined in the 2018 U.S. Army Corps of Engineers. Proposed Additional Procedures and Criteria for Permitting Projects under a Programmatic Determination of Not Likely to Adversely Affect Selected Listed Species in California (2018 NLAA), in order to reduce project effects on sensitive resources. Avoidance and minimization measures that would reduce project noise effects during pile driving shall include the following:

- All pile driving shall be conducted within the established environmental work windows between June and November in order to avoid potential impacts to special status fish species for this area of San Francisco Bay. These windows were promulgated in the Endangered Species Act section 7(a)(2) Biological Opinion for the Long-Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay (National Marine Fisheries Service Consultation Number: WCR-2014-1599).

- The SFPUC shall develop an Aquatic Sound Monitoring Plan prior to the start of pile driving. This plan shall provide detail on the methods used to monitor and verify sound levels during pile driving activities, and to establish safety zones for the protection of marine mammals and procedures (such as halting work) when a marine mammal enters a Level A zone.

- Piles (including sheet piles) shall be installed primarily using pre-drilling, oscillation, rotation, and/or vibratory pile driving methods. Use of an impact hammer shall be minimized to the extent feasible.

- If use of an impact hammer is required, the project shall implement the following measures to reduce potential impacts:

    - Use of cushion blocks between hammer and piles

    - Implementation of a "soft start" technique (i.e., initial strike set at reduced energy followed by 30 second pause then another reduced energy strike set), at the start of each workday or after a break in impact hammer driving of 30 minutes or more, to give fish and marine mammals an opportunity to vacate the area

    - Operation of only a single impact hammer at a time

- A qualified biological monitor shall conduct surveys before and during pile installation/driving activities (i.e., pre-drilling, pile oscillation, pile rotation, vibratory driving, and impact hammering). The monitor shall inspect the established work zone and adjacent bay waters and ensure the following measures are implemented during pile-installation and -driving activities:

    - Maintenance of the safety zones around the sound source, as identified in the Aquatic Sound Monitoring Plan, to ensure protection of marine mammals. Safety zones shall include areas where noise-related impacts to marine mammals may occur, as described in the project-specific hydroacoustic analysis memorandum.[218]

    - Activities are halted when a marine mammal enters the safety zone and allowed to resume only after the animal has vacated the area for a minimum of 15 minutes.

[218] ICF. *Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum*. July 2020.

- Maintenance of sound levels below 90 dBA in air when pinnipeds (seals and sea lions) are present.

The biological monitor shall maintain a monitoring log that shall document the following:

- A summary of daily pile-installation and -driving activities
- The results of any field sound measurements
- Any fish and marine mammal sightings
- Implementation of soft start pile-driving activities and safety zone requirements
- Any construction halts needed due to marine mammals entering safety zones

These measures may be modified during the required permitting process by the National Marine Fisheries Service and California Department of Fish and Wildlife. The final Aquatic Sound Monitoring Plan shall incorporate any requirements from these agencies.

Turbidity

Suspended sediments in the water column have the potential to affect fish by disrupting normal feeding behavior, reducing growth rates, increasing stress levels, and reducing respiratory functions. Sediment resuspension caused by construction activities (e.g., removal of piles or debris) is defined as those sediment particles suspended into the water column that do not rapidly settle out of the water column following resuspension. An increase in suspended solids can affect aquatic organisms by reducing dissolved oxygen levels and light transmission until sediment resettles, which could have the potential to smother aquatic habitats and organisms. Changes in light transmission have the potential to limit photosynthesis and reduce foraging abilities for organisms that rely on visual signals for feeding (e.g., salmonids and several species of birds).[219] Substantially depressed oxygen levels (i.e., below 5.0 milligrams per liter) may cause respiratory stress to aquatic life, and levels below 3.0 milligrams per liter may cause mortality.[220]

Resuspended sediment levels caused by natural phenomena such as floods, storms, large tides, and winds are often higher and of longer duration than those caused by dredging, pile driving, or other construction activities, especially in lakes and bays. Previous studies have demonstrated that marine organisms are accustomed to sediment resuspension levels greater than those generated by underwater construction activities.[221] The majority of in-water work would occur within dewatered cofferdams and would not cause resuspension of sediments because work would be occurring in dry work areas. Potential increased turbidity levels associated with in-water construction activities (e.g., installation of dock piles and cofferdam sheet piles, removal of piles and debris) would be minor, and generally localized to the immediate area of construction. Following in-water construction activities, sediments would disperse, and

219 Boudreau Associates, Southeast Outfall Islais Creek Crossing Replacement Project, Final Biological Assessment, September 2019.

220 San Francisco Estuary Institute (SFEI), *Effects of Short-term Water Quality Impacts Due to Dredging and Disposal on Sensitive Fish Species in San Francisco Bay*, 2008.

221 Ibid.

background levels would be restored within hours of disturbance. The sediment sampling within the project area indicated a lack of toxicity from the sediment (further sediment toxicity information provided in the section on dewatering below); therefore, the temporary suspension of sediments would not expose any special-status fish to potential toxic contaminants. In addition, normal circulation and strong currents rapidly circulate and disperse water temporarily affected by construction activities. Turbidity plumes would disperse within a matter of hours and the particulate concentrations would be diluted to levels that would pose no major threat to water quality or aquatic wildlife; therefore, the potential impact on special-status species from turbidity would be less than significant.

Dewatering Activities

Dewatering is the process of removing water from within the cofferdam structures. The process of dewatering could resuspend or inadvertently dissolve toxic compounds that are present in the sediment of Islais Creek Channel. In 2018, sediments from Islais Creek Channel were assayed using sensitive biological organisms in a controlled test.[222] An acute toxicity bioassay was undertaken on a composite sediment sample from the mudline of the proposed cofferdam.[223] The purpose of the bioassay was to determine whether the proposed dewatering activities have the potential to increase the toxicity levels of water in the creek such that impacts to aquatic species may occur. The acute toxicity test exposed test organisms, including larval fish (*Menidia beryllina*) and a shrimp-like crustacean (*Americamysis bahia*), to sediment elutriate[224] from the project site. Biological testing results indicated a lack of toxicity based on impacts to test organisms from dewatering water from surface sediments. The bioassays indicate that water from dewatering would not adversely affect aquatic species that are exposed to the dewatered water.

As discussed in Section E.17, Hydrology and Water Quality, water contained in the cofferdams would be removed after each cofferdam segment is fully installed and sediments disturbed by installation of the cofferdam have settled. The water would then be pumped into large portable tanks (baker tanks) if necessary to allow further sediment settling and treatment prior to being discharged back into Islais Creek, in accordance with the applicable permits. Dewatering discharges into the creek would be subject to authorization under section 401 combined Clean Water Act for water quality certification and waste discharge requirements to ensure impacts to water quality and biological resources would not occur from potential exposure to chemicals of concern during dewatering operations. This authorization would require dewatering activities be conducted in compliance with project-specific conditions and require implementation of measures such as use of dewatering tanks, water quality testing and treatment requirements, proper disposal methods, and agency reporting conditions. Therefore, impacts would be less than significant.

222 Elutriate tests are designed to measure and predict the release of contaminants to the water column in a variety of different conditions, such as open-water disposal, confined disposal, resuspension at a dredging site, and other engineering applications.

223 Bioassay is an analytical method to estimate potency of agents (such as toxins) by observing their effects on living organisms. It is often used to detect biological hazards and monitor water quality.

224 Sediment particles separated through a process of washing, dewatering, and/or settling.

Habitat Alteration

Construction of the cofferdam across the channel and removal of sediment to place the pipelines would result in the removal of approximately 11,275 cubic yards of sediment or approximately 0.26 acre of soft substrate foraging habitat for fish. During cofferdam installation and sediment removal, benthic invertebrates would also be removed within the top few feet of the sediment. This could temporarily reduce the diversity and productivity of benthic habitat in the excavation area. The benthic community and the fine grain size within the project area are one of the most common in the San Francisco Bay-Delta and Central Bay.[225] The deposition of sediments comparable to pre-construction conditions would begin almost immediately after final installation of the pipeline. The benthic community inhabiting and recolonizing the disturbed area would be expected to recover to pre-construction composition and abundances within a few months to up to two years, depending on when construction occurs and other ecological factors affecting recolonization.[226]

Based on the very small area of the Islais Creek Channel and expansive central San Francisco Bay adjacent to the project area, in combination with the short duration habitat would be unavailable for use by sensitive species, the potential temporary loss of 0.26 acre of seafloor habitat from the proposed project is expected to be undetectable in species populations. Impacts to fish habitat would be limited to a relatively narrow corridor across Islais Creek Channel, which is adjacent to a comparatively vast area of similar habitat in Islais Creek Channel and the San Francisco Bay. Furthermore, the project site is not used by sensitive species as part of a key migration route and results from tracking studies of salmon and steelhead out-migration movements do not indicate that salmon or steelhead use the area as a significant foraging area.[227] Pacific herring is the only special-status fish that may use the project site as spawning habitat; however, in-water work would only occur from June to November, outside the peak spawning period and therefore would not impede the use of Islais Creek Channel as a spawning site. The impact on special-status fish from loss of habitat would be less than significant.

Terrestrial Species

Nesting Birds

The proposed project includes pruning and potential removal of up to 11 landscape trees within Tulare Park (if the tapping tee is constructed) and some limited tree trimming and/or removal in Islais Creek Park for equipment access and staging. If nesting birds are present in the project area during active construction, nesting efforts could be disrupted by tree removal or the increase in noise and visual disturbance associated with construction. The loss of an active nest could constitute unauthorized take under the Federal Migratory Bird Treaty Act and/or the California Fish and Game Code. SFPUC Standard Construction Measure 7 (Biological Resources) requires preconstruction surveys for nesting birds and compliance with appropriate federal and state requirements if any active nests are discovered. Standard Construction Measure 7 (Biological Resources) also includes the implementation of avoidance measures if active nests are discovered, such as requiring tree removal to occur outside the nesting season and/or after any young

225 Boudreau Associates, LLC, *SFPUC Southeast Bay Outfall Islais Creek Crossing Replacement Project Endangered Species and Essential Fish Habitat Biological Assessment*, September 2019.

226 Ibid.

227 Jahn, A., *Young Salmonid Out-migration Through San Francisco By with Special Focus on their Presence at the San Francisco Waterfront*. Draft Report. Prepared for the Port of San Francisco, January 2011.

have fledged and the implementation of work area exclusion buffers around active nests. The loss of an active nest would be avoided through implementation of SFPUC Standard Construction Measure 7 (Biological Resources) and potential impacts to nesting birds would be less than significant.

Special-Status Plants

CNDDB and California Native Plant Society databases were reviewed to identify special-status plant species in the project vicinity and evaluate their potential to occur in the project area. No occurrences of terrestrial special-status plants have been documented within the project area.[228] A pedestrian survey to assess the habitat of the project work areas along the channel banks was conducted on February 21, 2019. The project area does not provide suitable habitat for special-status plants to inhabit or colonize due to poor substrate quality, routine vegetation management, lack of natural habitat due to surrounding industrial land uses, and/or inability to compete with non-native plants species. No special-status plants are expected to occur in the project area and no impact on special-status plants would occur.

Impact BI-2: The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Less than Significant)

A review of CNDDB and California Native Plant Society databases were completed to identify the presence of any potential sensitive natural communities in the project area and a pedestrian survey was conducted for the project area on February 21, 2019. Approximately 820 square feet (0.019 acre) of the project work area contains narrow bands of pickleweed mat. Pickleweed mat has a rarity ranking of S3 under the California Native Plant Society and is considered a sensitive natural community. The narrow bands of pickleweed mat in the project area are small, fragmented, occur in a highly disturbed setting, and do not provide suitable habitat for wildlife species that would normally occur within larger stands of pickleweed. Large stands of pickleweed mats are present throughout the San Francisco Bay, including restored pickleweed mats less than one mile away from the project area at Pier 94 and Heron's Head Park.[229] Cofferdam construction and shoreline excavation may permanently affect the 820 square feet of pickleweed mat habitat along the southern shoreline within the Islais Creek Park staging area. Due to the low habitat quality of the existing pickleweed mat, the limited impact area, and the large quantity of pickleweed that exists in the vicinity, the impact on pickleweed mat from the proposed project would be less than significant. No other riparian habitats or sensitive natural communities were identified in the project area. The impact on riparian habitats or sensitive natural communities would be less than significant.

Impact BI-3: The proposed project would not 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)

The proposed project would affect tidal wetlands along the banks of Islais Creek Channel, which are under the jurisdiction of the army corps pursuant to section 404 of the Clean Water Act and section 10 of the River and Harbors Act, the San Francisco Bay Regional Water Quality Control Board pursuant to section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act, and the BCDC pursuant to the

[228] CDFW, California Natural Diversity Database (CNDDB). Accessed December 2018.

[229] Sawyer, John O., Keeler-Wolf, Todd, Evans, Julie. *A Manual of California Vegetation*. 2009.

McAteer Petris Act and the San Francisco Bay Plan. Potential significant impacts resulting from construction activities include permanent fill of 820 square feet (0.019 acre) of tidal wetlands, potential temporary impacts on water quality, and risk of accidental discharge of sediment or hazardous materials.

As previously described, approximately 820 square feet (0.019 acre) of the Islais Creek Park staging area contains tidal wetlands, which are dominated by pickleweed. The narrow bands of pickleweed mat in the project area are small, fragmented, occur in a highly disturbed setting, and do not provide habitat for wildlife species that would normally occur within larger stands of pickleweed. The proposed project includes bank stabilization such as construction of a permanent sheet pile wall and replacement/addition of riprap along the southern shoreline. Following construction, the restored shoreline may not provide a suitable area for pickleweed to recolonize; therefore, this impact could be permanent. Large areas of pickleweed tidal wetlands are present throughout the San Francisco Bay, including less than one mile away from the project area at Pier 94 and Heron's Head Park.[230] Due to the minimal area of tidal wetlands impacted and the large quantity of similar wetlands in the project vicinity, the direct impact on tidal wetlands from project construction would be less than significant.

SFPUC Standard Construction Measure 3 (Water Quality) requires all projects to: 1) prepare either a stormwater control plan or a stormwater pollution prevention plan; and 2) implement tailored erosion and sediment controls to prevent potential discharges to surface waterways, including wetlands. SFPUC Standard Construction Measure 6 (Hazardous Materials) outlines procedures for hazardous materials management, including conducting a site assessment, preparing and implementing a hazardous material treatment, containment, and removal plan, and implementing measures to prevent accidental releases, as applicable. With the implementation of Standard Construction Measures 3 (Water Quality) and 6 (Hazardous Materials), impacts to wetlands from accidental sediment or hazardous material discharges during construction would be less than significant.

Impact BI-4: The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Less than Significant with Mitigation)

Aquatic Species

As previously discussed, various fish species may temporarily utilize aquatic habitat in Islais Creek Channel for foraging and resting during migration; however, the proposed project would not substantially interfere with the movement of migratory fish because Islais Creek Channel is not used as a key corridor along their migratory route. Their presence within the project area would be short-term and temporary and would likely occur outside the work window for the proposed project (June to November). Furthermore, the cofferdam configuration would not obstruct the entire width of the channel at any time and any fish entering the work area would not have their movement restricted through the channel. As such, the proposed project would not substantially interfere with migratory movement of these species and impacts would be less than significant.

[230] Ibid.

As previously described, Islais Creek Channel has been identified as a Pacific herring spawning location.[231] Spawning typically occurs between October and March, with peak spawning between December and February. In-water work would only occur from June to November, outside the peak spawning period and therefore would not impede the use of Islais Creek Channel as a spawning site. The impact on spawning sites would be less than significant. No other species are known to use the project area as a spawning or native wildlife nursery site.

Longfin smelt lacks a defined migratory route in the San Francisco Bay and distribution is driven by fluctuations in salinity. Adults seasonally occur within south San Francisco Bay, but are generally more concentrated in Suisun, San Pablo, and central San Francisco bays.[232] Occurrence data indicates that longfin smelt are found in low numbers south of the San Francisco – Oakland Bay Bridge and thus are unlikely to occur in large numbers within the project area.[233] Furthermore, the cofferdam configuration would not obstruct the entire width of the channel at any time; thus any fish within Islais Creek Channel would not have their movement restricted through the channel. Impacts to longfin smelt migration in the San Francisco Bay would be less than significant.

For all fish species potential sound impacts from pile driving could affect their immediate direction and/or ultimate migratory route. Sound impacts from pile driving could also affect the immediate direction of marine mammals. However, if any marine mammals or fish are present within the project area or vicinity during pile-driving activities, implementation of **Mitigation Measure M-BI-1: Noise Reduction and Monitoring to Protect Fish and Marine Mammals** would reduce potential disturbances and impacts to marine mammals or fish movement. For example, the use of exclusion zones for marine mammals would allow them to move through and vacate the area to avoid potential pile driving impacts and impacts to fish would be avoided or minimized since their presence within the project area would only be temporary and would likely occur outside the environmental work window in which pile driving would occur. The impact would be less than significant with implementation of mitigation.

Migratory Birds

Construction-related activities within Islais Creek Channel would result in temporary disturbance to open water habitat that occasionally supports migratory birds such as the surf scoter, the canvasback, the lesser scaup, and the greater scaup. Impacts to open water habitat would be limited to a relatively narrow corridor across Islais Creek Channel, which is proximate to a comparatively vast area of similar open water habitat in Islais Creek Channel and the San Francisco Bay. Migratory birds that may be disturbed by construction activities would be able to use similar nearby habitat. Furthermore, potential disturbance from construction activities would be temporary, and the project area would return to preconstruction conditions after

231 CDFW, Summary of the 2015-2016 Pacific Herring Spawning Population and Commercial Fisheries in San Francisco Bay, November 2013.

232 Merz, J. E., P. S. Bergman, J. F. Melgo, and S. Hamilton. Longfin Smelt: Spatial Dynamics and Ontogeny in the San Francisco Estuary, California, 2013.

233 Interagency Ecological Program for the San Francisco Bay Estuary; San Francisco Bay Study. 2010-201. 201479. Unpublished Raw Mid-water and Otter Trawl Data. *http://www.dfg.ca.gov/delta/projects.asp?ProjectID=BAYSTUDY*, accessed August 2019.

construction is completed. Therefore, impacts to the movement of migratory birds would be less than significant.

Impact BI-5: The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (No Impact)

As discussed under Impact BI-1, the proposed project includes pruning and potential removal of up to 11 landscape trees within Tulare Park for equipment access (if the tapping tee is installed) and some limited tree trimming and/or removal in Islais Creek Park for equipment staging. Unpermitted damage to or removal of a landmark tree[234], street tree[235], or significant tree[236] would conflict with existing San Francisco Public Works Ordinances and, consequently, would be considered a significant impact under this criterion. The trees that may be potentially removed are not designated as or meet the criteria for landmark trees or street trees;[237] therefore, the proposed project would not conflict with policies or ordinances related to landmark trees or street trees. In accordance with SFPUC Standard Construction Measure 7 (Biological Resources), SFPUC would comply with the substantive requirements of Article 16 of the San Francisco Public Works Code for all work around significant trees. Compliance would include the determination of whether trees proposed for removal meet the criteria for significant trees and, if so, requires implementation of the procedures for working within the dripline of or removal of significant trees described in Article 16 of the San Francisco Public Works Code. Compliance with the substantive requirements of the San Francisco Public Works Code for all work in the vicinity of potential significant trees would avoid any conflict with local policies or ordinances protecting trees. There are no other local policies or ordinances protecting biological resources that apply to the proposed project. Therefore, no impact would occur.

Impact C-BI-1: The proposed project in combination with cumulative projects, would result in significant impacts to biological resources. (Less than Significant with Mitigation)

For biological resources, the geographic scope for cumulative impacts includes the project area, the adjacent surrounding waters of San Francisco Bay, and locations within 0.25 mile of project work and staging areas. Cumulative projects are provided in Table 3, p. 38. Of these cumulative projects, the following are within the geographic scope evaluated for impacts to biological resources:

- Pier 94 Backlands, Pier 94, and Pier 96 Projects
- Davidson Wet-Weather Pump Station Improvement Project

234 A landmark tree is a tree that has been nominated for and designated with the status by the SF Department of Public Works Board of Supervisors, indicating that the tree holds environmental, cultural, historical, botanical, or other significance.

235 A street tree is any tree growing within the public right-of-way, including unimproved public streets and sidewalks, and any tree growing on land under the jurisdiction of the SF Department of Public Works and protected by Article 16 of the San Francisco Public Works Code.

236 A significant tree is a tree that is (1) on property under the jurisdiction of the SF Department of Public Works or (2) on privately owned-property with any portion of its trunk within 10 feet of the public right-of-way, and (3) that satisfies at least one of the following criteria: (a) a diameter at breast height (DBH) in excess of twelve (12) inches, (b) a height in excess of twenty (20) feet, or (c) a canopy in excess of fifteen (15) feet.

237 San Francisco Department of the Environment, *https://sfenvironment.org/landmark-trees,* accessed August 2019.

- Islais Creek Bridge Rehabilitation Project
- Combined Sewer Discharge Condition Improvement and Backflow Prevention Project

Construction Noise

The Pier 94 Backlands, Pier 94, and Pier 96 Projects involve improvements to developed parcels that do not provide any habitat for special-status biological resources. Furthermore, if pile driving along the shoreline was required for the Pier 94 Backlands, Pier 94, and Pier 96 Projects, it would be more than one mile from the proposed project and sound level impacts would not be expected to cumulatively combine at that distance. The Davidson Wet-Weather Pump Station Improvement Project and the Combined Sewer Discharge Condition Improvement and Backflow Prevention Project would not involve any pile driving, in-water work, or other sediment disturbance within the channel that could result in impacts to aquatic species.

The Public Works Islais Creek Bridge Rehabilitation Project would involve the use of pile driving and could increase in-water noise levels in proximity to the pile-driving activities. The Islais Creek Bridge Rehabilitation Project currently anticipates installing piles using only a vibratory hammer. As described in Section A, Project Description, the proposed project would employ various methods of pile installation, including pre-drilling, oscillation, rotation, vibratory driving, and limited impact hammering. Construction schedule and detailed design plans for the Islais Creek Bridge Rehabilitation Project are not currently available. Thus, a quantitative assessment of potential cumulative sound impacts to fish or marine mammals for the Islais Creek Bridge Rehabilitation Project cannot be conducted at this time. The proposed project includes a settlement and vibration monitoring plan that requires coordination with Public Works in an effort to avoid concurrent pile driving and related potential cumulative impacts. Nonetheless, there is potential for a cumulative underwater noise effects due to the potential that construction activities could occur concurrently for these projects and the close proximity of the projects. In the event it is infeasible to avoid concurrent pile driving for both projects, cumulative impacts resulting from potential concurrent pile-driving scenarios are presented for fish and marine mammals below.

Special-Status Fish

As described under Impact BI-1, vibratory pile driving is considered to be an avoidance and minimization measure for reducing effects to fish from impact pile driving and no threshold criteria for vibratory pile driving exist at this time. Because the Islais Creek Bridge Rehabilitation Project would install piles using only vibratory methods, the proposed project, in combination with the cumulative projects, would not result in a cumulative underwater noise impact on fish.

Marine Mammals

Pre-drilling, pile oscillation, pile rotation, and vibratory pile driving have the potential to result in adverse physical impacts on marine mammals and cumulative impacts to marine mammals could result if these project activities were conducted concurrently with vibratory driving for the Islais Creek Bridge Rehabilitation Project. As indicated in Table 18 and Table 20, p. 153, underwater noise impact distances associated with pre-drilling, pile oscillation, pile rotation, and vibratory pile driving represent relatively small areas of potential impact.[238] Assuming that the vibratory impact areas for the Islais Creek Bridge

[238] ICF, *Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum*, July 2020.

Rehabilitation Project are similar in size as those for the proposed project, there is potential for a cumulative increase in the extent of underwater noise impact areas if pile installation for both projects were to occur at the same time. Under this scenario, the cumulative sound level at that location could be as much as 3 dB higher than the sound level from any individual project. Using the assumed attenuation rate of 4.5 dB per doubling of distance, this could increase the marine mammal exclusion zone distance by approximately 60 percent.[239] As a result, the proposed project, in combination with the Islais Creek Bridge Rehabilitation Project, would result in a cumulative impact on marine mammals and the proposed project's contribution would be considerable. If the Islais Creek Bridge Rehabilitation Project and the proposed project were to conduct pile installation/driving activities at the same time, the SFPUC would be required to implement **Mitigation Measure M-C-BI: Expanded Marine Mammal Safety Zone and Biological Monitoring**, which would expand the zones of exclusion established for Mitigation Measure M-BI-1 by up to 60 percent. Similar to Mitigation Measure M-BI-1, discussed under Impact BI-1, a biological monitor with halt-work authority during pile-installation and -driving activities would be onsite to monitor the expanded cumulative injury zone. The proposed mitigation would protect species that enter the project area. Furthermore, implementation of Mitigation Measure M-BI-1 would reduce the likelihood that marine mammals would be present during construction of the Islais Creek Bridge Rehabilitation Project and proposed project, attenuate the maximum sound levels generated by the proposed project, and result in startle responses such that marine mammals would avoid the area where pile installation/driving is occurring. As a result, the cumulative impact would be less than significant with mitigation.

If the proposed project requires installation of piles using an impact hammer at the same time the Islais Creek Bridge Rehabilitation Project implemented use of a vibratory pile driver, the sound levels from the two projects would differ by more than 10 dB. Under this cumulative scenario, the smaller marine mammal impact area from the Islais Creek Bridge Rehabilitation Project's vibratory pile driving would be eclipsed by the larger impact area from the proposed project's impact pile driving, and there would be no cumulative increase to the proposed project's impact area. No cumulative impact would occur when considering the proposed project use of an impact hammer for pile driving.

> **Mitigation Measure M-C-BI: Expanded Marine Mammal Safety Zones and Biological Monitoring**
>
> In the event that the proposed project would implement pre-drilling, pile rotation, pile oscillation, and/or vibratory pile driving simultaneously with vibratory pile driving for the Public Works Islais Creek Bridge Rehabilitation Project, SFPUC shall increase the dimensions of the zones of exclusions identified in the aquatic sound monitoring plan (required under Mitigation Measure M-BI-1) by 60 percent for each pile-installation activity. All other monitoring activities and requirements per Mitigation Measure M-BI-1 shall be applied to the expanded safety zones.

Terrestrial Biological Resources

No riparian habitats or sensitive natural communities were identified in the project area; therefore, no cumulative impacts to these habitats could occur as a result of the proposed project and cumulative project. Construction activities for the Islais Creek Bridge Rehabilitation Project are expected to be limited to the

[239] Ibid.

bridge deck and fender system and is not anticipated to result in impacts to adjacent wetlands in the project area.[240] As such, the proposed project in combination with the Islais Creek Bridge Rehabilitation Project would not result in cumulative impacts to wetlands. The proposed project and the Islais Creek Bridge Rehabilitation Project would both temporarily disturb open water habitat that could support migratory birds, resulting in potentially cumulative impacts to this habitat. However, the area of open water habitat temporarily unavailable for use by migratory birds would be negligible when compared against the vast open water habitat available for use in Islais Creek Channel and the San Francisco Bay and the impact would be less than significant.

The Combined Sewer Discharge Condition Improvement and Backflow Prevention Project alignment crosses the Islais Creek Channel; however, it does not involve work within the creek channel or bank and would not impact these resources. All work for the Combined Sewer Discharge Condition Improvement and Backflow Prevention Project would occur within developed areas containing existing infrastructure. There is no existing cumulative impact on protected wetlands, riparian habitat, sensitive natural communities, or open water habitat for migratory birds.

The proposed project and cumulative projects would not result in other significant impacts on terrestrial biological resources related to construction activities because the project areas do not provide habitat for special-status terrestrial species due to its highly industrialized nature. Limited trees and ruderal vegetation are present in the cumulative project area and the cumulative projects do not propose removal of nesting habitat. Birds that may occur in the cumulative project area would be acclimated to highly urbanized environments.

Although cumulative projects are planned, the timing and activities of cumulative projects would ensure that impacts do not combine with the proposed project to contribute to a cumulatively significant impact on aquatic or terrestrial biological resources. The proposed project, in combination with the cumulative projects, would have a less-than-significant cumulative impact on terrestrial biological resources.

[240] AECOM. City of San Francisco Public Works, Project Plans for Islais Creek Bridge Rehabilitation (60 percent progress submittal). November 7, 2018.

E.16. GEOLOGY AND SOILS

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
16. 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 Division of Mines and Geology 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 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, creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐	☐

In the California Building Industry Association v. Bay Area Air Quality Management District case decided in 2015,[241] the California Supreme Court held that CEQA does not generally require lead agencies to consider how existing environmental conditions might affect a project's occupants, except where the project would significantly exacerbate an existing environmental condition. Accordingly, hazards resulting from a project that would place development in an existing or future seismic hazard area or an area with unstable soils are not considered impacts under CEQA unless the project would significantly exacerbate

[241] California Building Industry Association v. Bay Area Air Quality Management District, 62 Cal.4th 369. Opinion Filed December 17, 2015.

the seismic hazard or unstable soil conditions. Thus, the analysis below evaluates whether the proposed project would exacerbate existing or future seismic hazards or unstable soils at the project site and result in a substantial risk of loss, injury, or death.

The project site is not located within an Earthquake Fault Zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no *active* or *potentially active faults*[242] [243] exist on or in the immediate vicinity of the site.[244] The proposed project does not propose septic tanks or alternative wastewater disposal systems. Therefore, Topics E.16(a)(i) and E.16(e) are not applicable and not discussed further.

Impact GE-1: The proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, seismic-related ground failure (including liquefaction), or landslides. (Less than Significant)

Seismic Ground Shaking

The project area is in a seismically active region near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. The relative movement between the Pacific Plate and the North American Plate generally occurs across a 50-mile-wide zone extending from the San Gregorio Fault in the southwest to the Great Valley Thrust Belt in the northeast. Strain produced by the relative motions of these plates is relieved by right lateral strike slip faulting on the San Andreas Fault Zone and related faults (San Gregorio, Calaveras, Hayward), and by vertical reverse slip displacement on the Great Valley and other *thrust faults*[245] in the central California area.

A study by the U.S. Geological Survey 2014 Working Group on California Earthquake Probabilities concludes that there is a 72 percent probability of a strong earthquake (maximum *moment magnitude*[246] [Mw] ≥ 6.7) occurring in the San Francisco Bay region over the next 30 years (starting in 2014)[247]. The probability of a strong earthquake (Mw ≥ 6.7) occurring during that time period is 33 percent for the North San Andreas Fault Zone, 32 percent for the Hayward-Rodgers Creek Fault Zone, and 25 percent for the Calaveras Fault Zone.[248]

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242 An active fault is an earthquake fault that shows geologic evidence of movement within Holocene time (approximately the last 11,000 years).

243 A potentially active fault is an earthquake fault that shows geologic evidence of movement during the Quaternary period (approximately the last 1.8 million years).

244 California Department of Conservation, California Geological Survey, *Regulatory Maps.* Available at http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps.

245 A reverse fault of low angle, with older strata displaced horizontally over younger strata.

246 A measurement of the amount of energy produced by an earthquake. Moment magnitude is directly related to the average slip rate and fault rupture area. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in the measured amplitude of an earthquake wave. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

247 2014 Working Group on California Earthquake Probabilities (WCCEP), 2015a, "A New Earthquake Forecast for California's Complex Fault System," U.S. Geological Survey 2015-3009. http://pubs.usgs.gov/fs/2015/3009/

248 2014 Working Group on California Earthquake Probabilities (WGCEP), 2015b. "Long-Term Time-Dependent Model for the Third Uniform California Earthquake Rupture Forecast, Version 3 (UCERF 3)," Bulletin of the Seismological Society of America, March 10.

The nearest fault to the project site is the northern segment of the San Andreas Fault, which is located approximately 7 miles to the southwest. Further from the project site are the northern Hayward Fault, which is approximately 11 miles northeast, and the San Gregorio Fault, which is located approximately 11.3 miles southwest of the project site.[249] The intensity of earthquake ground motion at the project site would depend upon the characteristics of the generating fault, distance to the earthquake fault, magnitude and duration of the earthquake, and specific subsurface conditions. The U.S. Geological Survey Earthquake Hazards Program has produced a map of Soil Type and Shaking Hazard in the San Francisco Bay Area,[250] which maps five soils types in the Bay Area based on their shaking amplification effects; soft soils amplify groundshaking. The project site is in an area mapped as Soil Type E, which includes water-saturated mud and artificial fill. Strong amplification of shaking is expected for this soil type.

Groundshaking is the primary cause of earthquake damage to man-made structures, strong groundshaking could cause shearing, differential settlement, or heave of structures causing damage to buildings and structures. The project site is located in an area of high seismicity where amplified strong to very strong groundshaking could occur resulting from a large earthquake on the San Andreas Fault Zone or any of the active regional faults.

The SFPUC seismic design engineering standard and requirements[251] set forth consistent criteria for seismic design and retrofit of all San Francisco water and wastewater facilities and components. The seismic design standard incorporates by reference, where appropriate, the applicable building codes and industry standard procedures normally used for the design and rehabilitation of such facilities. These codes and standards specify minimum seismic design requirements. Due to the high seismic hazards in the San Francisco area and to meet the basic "level of service" criterion,[252] the SFPUC seismic design standard provides design requirements that may exceed applicable building codes or industry standards for specific facilities and components. The seismic design standard requires geotechnical and seismologic studies of a site and further specifies seismic analysis and design methodology to be used in the project analyses. Because the project would be evaluated and designed to meet level of service performance goals to avoid unacceptable system failure and engineered in accordance with SFPUC seismic design standards, the proposed project would not expose persons or structures to substantial adverse effects related to groundshaking, and would not exacerbate existing conditions related to groundshaking. The impact would be less than significant.

Seismic-Related Ground Failure

Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength due to increases in pore pressure during periods of earthquake-induced strong groundshaking.

249 AGS, *Geotechnical Data Report for the Southeast Outfall (SEO) Islais Creek Crossing Replacement Project, San Francisco, CA*, June 2020.

250 U.S. Geological Survey, 2019. Earthquakes Hazards Program, Soil Type and Shaking in the San Francisco Bay Area website. Accessed February 2019. https://earthquake.usgs.gov/hazards/urban/sfbay/soiltype/

251 SFPUC, General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities. Revision 3, DOC No. WSIP/CSP 001 R2R3, June 2014.

252 For water service the basic "Level of Service" criterion is to deliver winter day demand (WDD) of 215 mgd (February 2030 demand) within 24 hours after a major earthquake and for wastewater the basic "Level of Service" criterion is to reestablish dry-weather primary treatment levels within 72 hours after a major earthquake.

The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction. Liquefaction-related phenomena include lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects.

Lateral spreading is a seismically induced ground deformation failure in which near surface soil layers typically break into blocks that progressively move downslope or toward a nearby free face such as a stream channel, river embankment, or a shoreline. Underground facilities and structural elements (e.g., pipelines, spread footings, pile foundations, etc.) that extend through or across a zone of lateral spreading may be pulled apart or sheared.

The proposed project site is in an area mapped by U.S. Geological Survey as having "very high" liquefaction susceptibility.[253] Potentially liquefiable materials within the project site include loose sandy layers in the artificial fill and soft sandy silt in the creek sediments. Groundwater levels in the artificial fill above the channel water line appear to be consistent with the water level in the channel, approximately 8 feet below ground surface when measured during geotechnical exploration in October 2018.[254] The Young Bay Mud and dense interbedded sands underlying the pipelines across the majority of the channel have low potential for liquefaction. The project design includes use of deep piles that would extend below the Bay Mud and provide support for the pipelines, vaults, and tapping tee to reduce potential damage to project components due to liquefaction.

Liquefaction-induced lateral spreading of the channel walls and slopes where artificial fill is present could occur. The proposed sheet pile wall along the southern shoreline and additional riprap proposed on both the northern and southern creek banks would improve stability of the channel banks and reduce the potential for impacts related to lateral spreading. Because the proposed project would be designed to meet stringent SFPUC seismic design standards, the proposed project would be less prone to damage from liquefaction and lateral spreading than the existing pipelines. As such, the proposed project would not expose persons or structures to substantial adverse effects or exacerbate existing conditions related to ground failure, including liquefaction, and the impact would be less than significant.

Landslides

Other forms of seismically induced ground failures which may affect the project area include seismically induced landslides and slope failures. Landslides triggered by earthquakes have historically been a significant cause of earthquake damage. In central California, the 1989 Loma Prieta earthquake triggered thousands of landslides that were responsible for destroying or damaging numerous structures, blocking roads and major transportation corridors, and causing one fatality. Areas that are most susceptible to

253 Witter, R. C., Keith L. Knudsen, Janet M. Sowers, Carl M. Wentworth, Richard D. Koehler, and Carolyn E. Randolph, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California, Liquefaction Susceptibility Map, U.S. Geological Survey Open File Report 2006-1037, 2006.

254 AGS, *Geotechnical Data Report for the Southeast Outfall (SEO) Islais Creek Crossing Replacement Project, San Francisco, CA,* June 2020.

earthquake-induced landslides are steep slopes in poorly cemented or highly fractured rocks, areas underlain by loose and/or weak soils, and areas on or adjacent to existing landslide deposits.

The project site and proposed staging areas are not located within or near areas subject to landslides as identified by the California Geological Survey[255]. Most of the project area is relatively level and would not be subject to landslide, with the exception of the banks of Islais Creek, which may be subject to sliding or slumping in the event of a large earthquake. The proposed project would install new permanent sheet pile walls along the southern bank adjacent to the booster station to the new southern flow meter vault. New and additional riprap would also be installed on both the northern and southern banks to provide slope protection. The improved slope protection would decrease the potential for seismic-induced landslides at the project site. Additionally, the proposed project would be designed per the SFPUC seismic design standard to meet the level of service performance goals and to avoid unacceptable system failure. As such, the proposed project would not expose persons or structures to substantial adverse effects or exacerbate existing conditions related to landslides, and the impact would be less than significant.

Impact GE-2: The proposed project would not result in substantial soil erosion or the loss of topsoil. (Less than Significant)

Construction-related ground disturbance consisting of clearing and grading, trenching, and excavation could increase the potential for soil erosion in the area of ground disturbance. As discussed in Section E.17, Hydrology and Water Quality, in order to comply with the proposed project's Construction General Permit or article 4.2 construction site runoff control permit requirements, the SFPUC or its contractor(s) would be required to develop and implement an erosion and sediment control plan or a storm water pollution prevention plan (SWPPP) (depending on the size of the disturbance) for areas that discharge to Islais Creek directly or via a separate stormwater system to address construction-related runoff. The plans would include a suite of best management practices tailored to the proposed project to prevent erosion. These best management practices may include measures such as use of straw wattles, sandbags, track-out control, silt fencing, and covering stockpiles, to control erosion and sedimentation during construction and prevent discharge of soils into stormwater runoff. The SFPUC would conduct routine inspections of all best management practices to document compliance and identify deficiencies to be corrected. The SFPUC would also implement standard construction measures to further prevent erosion. SFPUC Standard Construction Measure 3 (Water Quality) requires the implementation of erosion and sediment controls (e.g., fiber rolls and/or gravel bags around storm drain inlets, silt fencing, etc.). Compliance with permit requirements and implementation of SFPUC Standard Construction Measure 3 (Water Quality) would minimize potential for soil erosion during construction. Although some topsoil would be removed during clearing and grubbing in the vegetated portions of Islais Creek Park and Tulare Park, the amount of topsoil removed would be limited and would be replaced with clean fill material following completion of the proposed project. As a result, impacts associated with soil erosion and loss of topsoil would be less than significant.

[255] California Geological Survey, Earthquake Zones of Required Investigation, San Francisco South Quadrangle, Seismic Hazard Zones, November 17, 2000, *http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/SAN_FRANCISCO_SOUTH_EZRIM.pdf*, accessed December 2, 2019.

Impact GE-3: The proposed project would not be located on geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project. (Less than Significant)

As discussed in Impact GE-1, the project area is relatively level and would not be subject to landslides with the exception of the channel banks of Islais Creek. Although the banks may be subject to sliding or slumping, installation of cofferdams and shoring within shoreline excavations would provide slope protection during construction. During operation, the permanent sheet pile wall along the southern bank and new and additional riprap along the southern and northern banks of Islais Creek would reduce potential for slope failure at the project site. The proposed project design would reduce the likelihood of a landslide or lateral spreading in the project area. Furthermore, with the installation of deep support piles and incorporation of stringent geotechnical design standards, the proposed project would be more resistant to liquefaction and unstable soils than the existing pipelines. As such, the proposed project would not expose persons or structures to substantial adverse effects or exacerbate existing conditions related to geologic unit or soil instability, and the impact would be less than significant.

Impact GE-4: The proposed project would not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial direct or indirect risks to life or property. (Less than Significant)

Expansive soils are characterized by their ability to undergo significant volume change (shrink and swell) due to variation in soil moisture content. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine grained with a high to very high percentage of clay. Soils with moderate to high shrink-swell potential would be classified as expansive soils.

The artificial fill in the project area includes discontinuous layers of clay with varying amounts of silt, sand and gravel. These clay units would be subject to expansive shrink-swell behavior in the onshore areas where the groundwater level varies with the channel tides. Submerged clayey units, such as the fat clays of the Young Bay Mud and creek sediments, may include expansive clay but do not undergo shrink-swell behavior as they are always saturated. As discussed in GE-1, the proposed project would be designed to meet stringent SFPUC seismic design standards and would therefore be less prone to damage from expansive soils than the existing pipelines. These engineering design standards would require the project design to address the potential for expansive soils. Therefore, this impact would be less than significant.

Impact GE-5: The proposed project would not directly or indirectly destroy a unique geologic feature. (No Impact)

A unique geologic feature embodies distinctive characteristics of any regional or local geologic principles, provides a key piece of information important to geologic history, contains minerals not known to occur elsewhere in the county, and/or is used as a teaching tool. There are no unique geologic features in the project area; therefore, no impacts on unique geologic features would occur.

Impact GE-6: The proposed project would not directly or indirectly destroy a unique paleontological resource or site. (Less than Significant with Mitigation)

Paleontological resources are any fossilized remains, traces, or imprints of organisms that are preserved in the Earth's crust and are of paleontological interest and provide information about the history of life on Earth. Fossil remains may include bones, teeth, shells, leaves, and wood. They are found in the geological deposits within which they were originally buried. Collecting localities and the geologic formations containing those localities are considered paleontological resources. Paleontological resources are considered nonrenewable resources because the organisms they represent no longer exist, thus, once destroyed, these resources can never be replaced. Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data.[256] These data are important because they are used to examine evolutionary relationships, provide insight on the development of and interaction between biological communities, establish time scales for geologic studies, and for many other scientific purposes. Paleontological "sensitivity" is defined as the potential for a geologic unit to produce scientifically significant fossils. Sensitivity is determined by rock type, history of the geologic unit in producing significant fossils, and fossil localities that are recorded from that unit. Paleontological sensitivity is assigned based on fossil data collected from the entire geologic unit, not just at a specific site. The Society for Vertebrate Paleontology has outlined criteria for screening the paleontological potential of rock units and has established assessment and mitigation procedures tailored to accommodating such potential.[257] High and low-potential rocks are determined by applying the following criteria:

- **High Potential.** Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered in the past, or rock formations that would be lithologically and temporally suitable for the preservation of fossils. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.

- **Low Potential.** Geologic units that are not known to have produced a substantial body of significant paleontological material, as demonstrated by paleontological literature and prior field surveys, and that are poorly represented in institutional collections.

Unlike archaeological sites, which are narrowly defined, paleontological sites are defined by the entire extent (both areal and stratigraphic) of a unit or formation. In other words, once a unit is identified as containing vertebrate fossils, or other rare fossils, the entire unit is a paleontological site.

Areas of the project site where ground disturbance would occur are underlain by artificial fill, recent creek sediment, Holocene Young Bay Mud, and Holocene to Pleistocene interbedded sands. Artificial fill and the

256 Society of Vertebrate Paleontology (SVP), 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Society of Vertebrate Paleontology, Impact Mitigation Guidelines Revision Committee.

257 Society of Vertebrate Paleontology, *Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines*. Society of Vertebrate Paleontology News Bulletin 163:22-27, 1995.

recent creek sediments that have formed in the man-made Islais Creek Channel have no paleontological sensitivity. Although numerous invertebrate fossils such as mollusk shells have been observed in the Young Bay Mud,[258] due to its young age, the Holocene Young Bay Mud is considered to have low potential for significant fossils. Underlying the Young Bay Mud from roughly the middle of the channel to the southern bank is a layer of interbedded sands at approximately 50 feet below the surface elevation, or at depths of ranging from about 23 to 38 feet below the channel bottom surface (the channel is deeper on the southern side of Islais Creek).[259] The interbedded sands are considered to have a moderate to high paleontological sensitivity;[260] therefore, paleontological resources may be present in the interbedded sand unit underlying the Young Bay Mud in the project area.

Pile installation would involve limited disruption of the underlying geologic units and would be unlikely to expose paleontological resources. Although much of the ground disturbance and excavation would occur within more superficial units with low paleontological sensitivity (e.g., artificial fill, creek sediments, and Young Bay Mud), the deeper trench excavation below -50 feet elevation for the seal wall and pipe installation in the middle and southern portions of the channel would encounter the interbedded sands beneath the Young Bay Mud. The excavation for the pipe would extend approximately 4 feet into the interbedded sand layer; a narrow approximately 30-foot-wide excavation for the seal wall would extend through 15 feet of interbedded sands. While these proposed deep trench excavation activities would affect a relatively limited amount of the interbedded sand unit, they could nevertheless damage or destroy paleontological resources if they are present; therefore, this impact is considered potentially significant. **Mitigation Measures M-GE-6a: Inadvertent Discovery of Paleontological Resources and M-GE-6b, Paleontological Monitoring in Areas of Moderate Sensitivity** would minimize potential environmental impacts by ensuring that workers can recognize paleontological resources and by putting in place procedures should unforeseen discovery of paleontological resources occur. In addition, a qualified paleontologist would spot-check the materials excavated from the interbedded sand layer for potential paleontological resources. These measures outline stop work procedures, a buffer around the potential resources, monitoring, resource evaluation and preservation methods. The impact on paleontological resources that may be present would be less than significant with mitigation.

Mitigation Measure M-GE-6a: Unanticipated Discovery of Paleontological Resources

Prior to commencing excavation in Islais Creek, the SFPUC shall ensure that all workers are trained on the contents of the Paleontological Resources Alert Sheet, as provided by the San Francisco Planning Department, to provide worker environmental awareness training regarding potential paleontological resources. The Paleontological Resources Alert Sheet also shall be prominently displayed at the construction site during earth-moving activities. In addition, the SFPUC shall inform construction personnel of the immediate stop work procedures and contact information to be followed if bones or other potential fossils are unearthed at the project site, and the laws and

[258] CH2MHill, *Application for Certification for the San Francisco Electric Reliability Project*, Volume I, Subsection 8.16 Paleontological Resources, 2004, *https://www.energy.ca.gov/sitingcases/sanfrancisco/documents/applicant/AFC_CD-ROM/Vol_I/Section_8-16_Paleo_Resoourc.pdf*

[259] AGS, *Geotechnical Data Report for the Southeast Outfall (SEO) Islais Creek Crossing Replacement Project*, *San Francisco, CA,* June 2020.

[260] Paleo Solutions, San Francisco Paleontological Sensitivity Map, March 15, 2018.

regulations protecting paleontological resources. The SFPUC shall retain documentation of the worker training and location of the informational handout display.

In the event of the discovery of an unanticipated paleontological resource during construction, excavations within 25 feet of the find shall temporarily be halted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology's 2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources). The qualified paleontologist shall determine if the discovery is scientifically significant. Work within the sensitive area shall resume only when deemed appropriate by the qualified paleontologist in consultation with the planning department. If a paleontological resource assessment results in a determination that the resource is not scientifically important, this conclusion shall be documented in a brief Paleontological Evaluation Letter. The Paleontological Evaluation Letter shall be submitted to the planning department and the SFPUC within 30 days of the consultation.

If a paleontological resource is determined to be of scientific importance, the paleontologist shall notify the SFPUC and the planning department immediately. If, on consultation with the planning department and SFPUC, it is determined there are no feasible avoidance measures a Paleontological Mitigation Program (mitigation program) must be prepared by the qualified paleontologist engaged by the SFPUC. The mitigation program shall include measures to fully document and recover the resource. The mitigation program shall be submitted to the SFPUC and planning department for review and approval within 10 business days of the discovery. Earth-disturbing activities in the project area that would affect sensitive paleontological units shall be monitored at a frequency as determined by the qualified paleontologist for the duration of such activities in collaboration with the planning department, once work is resumed.

The mitigation program shall include: 1) procedures for construction monitoring at the project site; 2) fossil preparation and identification procedures; 3) curation into an appropriate repository; and 4) preparation of a paleontology report at the conclusion of earth-disturbing activities. To avoid construction delays, fully exposed fossils will be immediately removed by the paleontologist to the extent feasible. Consistent with the Society of Vertebrate Paleontology 2010 guidelines, samples of the soil matrix where the discovery occurred may need to be removed from the project site and processed elsewhere. The report shall include dates of field work, results of monitoring, fossil identifications to the lowest possible taxonomic level, analysis of the fossil collection, a discussion of the scientific significance of the fossil collection, conclusions, locality forms, an itemized list of specimens, and a repository receipt from the curation facility. The SFPUC shall be responsible for the preparation and implementation of the mitigation program, in addition to any costs necessary to prepare and identify collected fossils, and for any curation fees charged by the paleontological repository. A paleontology report shall be submitted to the planning department for review within 30 business days from conclusion of earth-moving activities, or as negotiated following consultation with the planning department.

M-GE-6b: Paleontological Monitoring in Areas of Moderate Sensitivity

A qualified paleontologist shall provide spot-checking of subsurface conditions during initial trench excavations for the seal wall and pipe installation in the middle of Islais Creek that extend into the interbedded sand layer located at approximately -50 feet elevation to provide a field assessment of locations identified as having moderate sensitivity for paleontological resources. If through field observations the sediments are determined to be unlikely to preserve fossils, then construction spot-checking shall be halted at the discretion of the qualified paleontologist in consultation with the planning department. This conclusion shall be documented in a brief Paleontological Evaluation Letter and submitted to the planning department for review within 30 days of the consultation.

If the sediments in the project area are determined to be conducive to fossil preservation, earth-disturbing activities in the project area shall continue to be spot-checked or monitored at a frequency as determined by the qualified paleontologist for the duration of such activities in consultation with the planning department. If paleontological resources are discovered, the paleontological monitor shall have the authority to temporarily redirect construction away from the discovery in order to assess its significance and a mitigation program shall be implemented, as outlined in Mitigation Measure M-GE-6a. If no paleontological resources are discovered, this conclusion shall be documented in a Paleontological Monitoring Results Letter and submitted to the planning department for review within 30 days of completion of construction monitoring.

Impact C-GE-1: The proposed project, in combination with cumulative projects, would not have a significant impact on geology and soils. (Less than Significant)

Although the entire Bay Area is located within a seismically active region with a high risk of seismic hazards and a wide variety of geologic conditions, the geographic scope for potential geology and soils impacts is generally localized and site-specific, encompassing the project site and immediate vicinity. The cumulative projects that would be constructed within and adjacent to the proposed project include the Islais Creek Bridge Rehabilitation Project. In order to have a cumulative impact, adverse geologic conditions would have to occur at the same time and in the same location as the proposed project.

Seismic Ground Shaking, Seismic-Related Ground Failure, and Landslides

The proposed project and cumulative project could be subject to strong groundshaking and are located in an area mapped as having "very high" liquefaction susceptibility. As described in Impact GE-1, the proposed project would be designed and constructed in accordance with current building codes, standards, and engineering practices to protect against seismic and soil-related hazards. Construction of the cumulative project would also be subject to these same requirements. Thus, the proposed project, in combination with the cumulative project, would have a less-than-significant cumulative impact related to seismic safety and unstable soils.

Soil Erosion

As discussed in Impact GE-2, ground disturbance and construction activities associated with the proposed project could increase the potential for soil erosion. The Islais Creek Bridge Rehabilitation Project could also increase the potential for erosion in the immediate project area. However, the cumulative project

would be subject to the same requirements to implement erosion control measures during construction, in accordance with construction stormwater permits, and/or Article 4.1 of the San Francisco Public Works Code to reduce the potential for topsoil loss and erosion. The proposed project, in combination with the cumulative project, would have a less-than-significant cumulative impact related to erosion.

Unstable and Expansive Soils

As discussed in Impact GE-3, unstable soils and landslides could potentially be triggered by construction along the banks of Islais Creek; however, this impact is minimized with implementation of construction and project design features such as sheet piles and riprap. The Islais Creek Bridge Rehabilitation Project would also include construction along the Islais Creek Channel banks and would be required to be designed and constructed in accordance with current state, and/or federal building codes, standards, and engineering practices to protect unstable slopes and address expansive soil risks. Therefore, the proposed project, in combination with the cumulative project, would have a less-than-significant cumulative impact related to unstable or expansive soils.

Impact C-GE-2: The proposed project, in combination with cumulative projects, would not directly or indirectly destroy a unique paleontological resource or site. (Less than Significant)

The geographic scope of impacts on a unique paleontological resource is generally localized and site-specific, encompassing the project site and immediate vicinity. All of the cumulative projects identified are assumed to involve some degree of ground disturbance during construction and, to the extent this disturbance would extend into geological units that could be fossil bearing, could also have the potential to uncover and disturb previously unidentified unique paleontological resources if present. As discussed under Impact GE-6, the proposed project has the potential to damage unique paleontological resources if they are present during excavation in Islais Creek. This impact would be less than significant with implementation of Mitigation Measures M-GE-6a: Unanticipated Discovery of Paleontological Resources and M-GE-6b: Paleontological Monitoring in Areas of Moderate Sensitivity. Cumulative construction projects do not involve excavations in the immediate vicinity and, given their distances from the project site, would not affect the same unique paleontological resources, if any are present, as the proposed project. Because the project would have a less-than-significant impact on paleontological resources with mitigation and impacts on paleontological resources are site-specific and generally limited to the immediate fossil location, the proposed project, in combination with other cumulative projects, would not result in a significant cumulative impact on paleontological resources. This impact would be less than significant.

E.17. HYDROLOGY AND WATER QUALITY

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
17. 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 that would:	☐	☐	☒	☐	☐
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐	☐
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 exiting or planning 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 releases of pollutants due to project inundation?	☐	☐	☒	☐	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐	☐

Waterbodies

Islais Creek, which is one of the principal creeks in San Francisco, was mostly converted to an underground culvert. Currently, Islais Creek is exposed only in Glen Canyon Park and in the project area. In the project area, the creek consists of a tidally influenced dredged channel extending approximately 1 mile west and inland from the San Francisco Bay. Islais Creek drains into the central San Francisco Bay. Islais Creek is an

impaired waterbody with elevated levels of ammonia, dieldrin, hydrogen sulfide, polycyclic aromatic hydrocarbons, and chlordane. [261,262]

Flood Risk

Over 90 percent of San Francisco is served by the combined sewer system which diverts the majority of stormwater flows away from creeks such as Islais Creek. Some low-lying areas along San Francisco's Bay shoreline are subject to flooding during periods of extreme high tides, storm surge, and waves. Along the shoreline of the bay, storm waves typically raise the surface water elevation by 1 to 4 feet during major winter storms several times a year.[263]

The Federal Emergency Management Agency (FEMA) manages the National Flood Insurance Program. To support this program, FEMA prepares Flood Insurance Rate Maps (FIRMs) that identify areas subject to inundation during a flood event having a 1 percent chance of occurrence in a given year (also known as a "base flood" or "100-year flood") and 0.2 percent chance of occurrence in a given year ("500-year flood"). FIRMs take into account flood hazards associated with coastal areas, from wave hazards[264]. FEMA has issued revised preliminary FIRMs for San Francisco, which identify portions of the project site within the 100-year flood area.[265] The Rankin, Tennessee Street, Illinois Street staging areas and portions of the Islais Creek Park, Pier 80, Pier 94/96, and Pier 96 staging areas are also within the 100-year flood area. SFPUC prepared 100-year storm flood risk maps that identify areas that also could flood from stormwater runoff. Two staging areas, Rankin Street and Tennessee Street, are located within the SFPUC-designated 100-year flood zone[266] and could be inundated by rainfall runoff. The project site and all of the staging areas, except Pier 94 Backlands and part of Pier 94/96 are within the tsunami inundation zone.[267]

Sea levels are rising globally due to climate change, and they are expected to continue to rise at an accelerating rate for the foreseeable future. SFPUC has completed sea level rise and storm surge inundation mapping and the Ocean Protection Council provides sea level rise projections for San Francisco.[268] The sea level at the San Francisco tidal gauge has risen approximately 0.08 inch per year since 1897, resulting in about 0.64 foot of sea level rise between that time and 2016[269]. SFPUC has designed the proposed project

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261 San Francisco Bay Regional Water Quality Control Board, Category 5 2016 California 303(d) List of Water-Quality-Limited Segments, 2017, *https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/2016_303d/category5_report.shtml*

262 San Francisco Public Utilities Commission, Systems Planning and Regulatory Compliance, Draft Final Report: Sediment Investigations at Islais Creek and Mission Creek, 1998, 1999, 2000, November 2002.

263 SFPUC, Bayside Sea-Level Rise Mapping Technical Memorandum, p. 10.

264 City and County of San Francisco Office of the City Administrator, San Francisco Floodplain Management Program Fact Sheet. March 1, 2016, *https://www.sfgsa.org/sites/default/files/Document/Floodplain%20Management%20Fact%20Sheet%20rev%203-1-16%20CMB.pdf*

265 FEMA, Preliminary FEMA Map Products, California, San Francisco County, 2019, *https://hazards.fema.gov/femaportal/prelimdownload/searchResult.action*.

266 San Francisco Public Utilities Commission, *100-Year Storm Flood Risk Map – Bayview*, September 25, 2018.

267 City and County of San Francisco, *Community Safety*, *San Francisco General Plan*, October 2012.

268 San Francisco Public Utilities Commission, Climate Stressors and Impacts: Bayside Sea Level Rise Mapping Final Technical Memorandum, March 2015.

269 NOAA, Mean Sea Level Trend 9414290 San Francisco, California. Available online at https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=9414290. Accessed November 19, 2017.

to protect the creek bank and project facilities from erosion and overtopping under 100-year storm surge conditions with medium to high risk aversion sea-level rise projected conditions of 3.9 to 4.5 feet by 2080.[270]

Groundwater

The project site is located in the Islais Valley Groundwater Basin, which is not used as a drinking water supply and is inadequate for municipal supply.[271] The Water Quality Control Plan for the San Francisco Basin identifies industrial process supply and industrial service supply as an existing beneficial use for the groundwater basin, and municipal and domestic supply as well as agricultural supply as potential beneficial uses.[272] One well used for industrial purposes is reportedly located near the southeast plant on Davidson Avenue, over 800 feet to the north of the project site, although its presence is unverified.[273] [274]

Impact HY-1: The proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. (Less than Significant)

Construction

Stormwater Discharge

If not properly managed, construction activities such as ground disturbance, stockpiling of excavated materials, and transportation of materials could result in temporary soil erosion. Sediments disturbed by construction activities could flow into the combined sewer system, separate stormwater system, or directly into receiving waters in violation of water quality standards during storms. Chemical releases from the project work area and staging areas could also occur due to the use of paints, solvents, fuels, lubricants, and other hazardous materials associated with heavy construction equipment. Once released, these hazardous materials could be transported to receiving waters through stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters.

Stormwater and runoff from the project site flow directly into Islais Creek. Stormwater and runoff at the staging areas flow directly into receiving waters (such as Islais Creek or the central San Francisco Bay) or into the SFPUC's combined sewer or separate stormwater systems, which ultimately flow into the San Francisco Bay. Excavation and construction activities for the proposed project would disturb approximately 10,500 square feet on the shoreline of Islais Creek. Up to 1.5 acres may be disturbed for site preparation of staging areas, depending upon which staging areas are used. Soils sampled at the project site were found to have several types of contamination above reporting limit levels (refer to Section E.18, Hazards and Hazardous Materials). As such, project construction activities have the potential to disturb

[270] California Ocean Protection Council. 2018. *State of California Sea-Level Rise Guidance 2018 Update*. Available: http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf.

[271] San Francisco Public Utilities Commission. (2016, April). 2015 Urban Water Management Plan for the City and County of San Francisco.

[272] San Francisco Bay Regional Water Quality Control Board. (2007, January 18). San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan).

[273] SFPUC, *Southeast Plant Headworks Replacement Project Final Mitigated Negative Declaration*, Devember 19, 2016.

[274] Frye, Karen, *Re: Property at 1500 Davidson Avenue, San Francisco, CA 94124* Received by Robert Legallet, September 20, 2016.

contaminated soils and carry contaminated sediment into SFPUC's combined sewer system, separate stormwater system, or directly into Islais Creek and ultimately to the central San Francisco Bay.

Under the Federal Clean Water Act, the discharge of pollutants to waters of the United States is prohibited unless performed in compliance with a NPDES permit. Any stormwater discharge during construction that flows into the combined sewer system would receive treatment at the southeast plant to standards set forth in the facility's NPDES permit prior to discharge into the Bay.

Water quality impacts or construction-related stormwater discharges directly to the Islais Creek and the central San Francisco Bay or via a separate stormwater system would be minimized through compliance with applicable regulations. The project work area would involve disturbance of over 5,000 square feet, and potentially less than 1 acre, depending on the condition and combined size of the selected staging area(s). The proposed project would require coverage under the construction site runoff control permit in accordance with article 4.2 of the San Francisco Public Works Code. According to the permit, an erosion and sediment control plan must be prepared and implemented. The erosion and sediment control plan must include the following information: location and perimeter of the site, location of nearby storm drains and/or catch basins, existing and proposed roadways and drainage patterns within the site, and a drawing or diagram of the sediment and erosion control devices to be used onsite. At a minimum, the plan would also contain a visual monitoring program and a chemical monitoring program for nonvisible pollutants that could result from use and storage of hazardous materials. The erosion and sediment control plan would also specify minimum best management practices related to housekeeping (storage of construction materials, waste management, vehicle storage and maintenance, landscape materials, pollutant control); non-stormwater management; erosion control; sediment control; and run-on and runoff control. Under the construction site runoff control permit requirements of public works code article 4.2, the construction contractor would be required to conduct daily inspections during the rainy season (October 1 through April 15) and weekly during the dry season, and maintenance of all erosion and sediment controls and must provide inspection and maintenance information to the SFPUC as the administering agency.

The State Water Resources Control Board adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (SWRCB Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and Order 2012-0006-DWQ), referred to herein as the Construction General Permit. The Construction General Permit requires the development and implementation of a SWPPP for construction activities that disturb 1 or more acres of soil. If ground disturbance is required for the staging areas and exceeds 1 acre in combination with the project site disturbances, the proposed project would also be required to comply with the Construction General Permit in addition to the construction site runoff control permit. Article 4.2 provides that for projects subject to both the Construction General Permit and article 4.2, a SWPPP may be prepared in lieu of the erosion and sediment control plan. [275]

In addition to the regulatory requirements for runoff control, the SFPUC would implement standard construction measures that protect water quality. SFPUC Standard Construction Measure 3 (Water Quality) requires the implementation of erosion and sediment controls (e.g., fiber rolls and/or gravel bags around

[275] SFPUC, Construction Site Runoff Control Program, 2018, http://www.sfwater.org/index.aspx?page=235, accessed on February 28, 2019.

storm drain inlets, silt fencing, etc.) tailored to the proposed project to prevent discharges of sediment and other pollutants into storm drains and all surface waters. SFPUC Standard Construction Measure 6 (Hazardous Materials) requires the preparation and implementation of a plan for treating, containing, and removing contaminated or hazardous materials in accordance with applicable local, state, and federal regulations. With compliance with the Construction General Permit if required, article 4.2 construction site runoff control permit requirements, and SFPUC Standard Construction Measures 3 (Water Quality) and 6 (Hazardous Materials), water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of construction-related stormwater runoff would be less than significant.

Dewatering

The majority of dewatering would be required to accommodate construction work in the Islais Creek Channel. Approximately 3.5 million gallons of water is anticipated to be removed from within the cofferdams. As detailed in Section A.6.2.1, Cofferdam Installation and Dewatering, water contained in the cofferdams would be removed after each cofferdam segment is fully installed and sediments disturbed by installation of the cofferdam have settled. The water would then be pumped into large portable tanks (baker tanks) if necessary to allow further sediment settling and treatment prior to being discharged back into Islais Creek downstream of the work area, in accordance with the applicable permits or directly from the cofferdam to the creek if the turbidity of the water within the cofferdam is the same as the turbidity of the water outside the cofferdam.

Dewatering would also occur in excavations and trenches on the channel banks and within the excavation at Tulare Park. The construction contractor would be required to maintain groundwater levels below the bottom of the excavation to facilitate dry working areas. The SFPUC would treat any water pumped from open excavations to meet regulatory requirements prior to discharge to Islais Creek. Dewatering discharges into the creek would be subject to authorization under section 401 combined Clean Water Act for water quality certification and waste discharge requirements. Authorization under section 401 of the Clean Water Act would require dewatering activities be conducted in compliance with project-specific conditions and require implementation of measures such as use of dewatering tanks, water quality testing and treatment requirements, proper disposal methods, and agency reporting conditions. The project dewatering would be completed in compliance with applicable state and local water quality protection requirements; therefore, water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of dewatering waste would be less than significant.

In-Channel Disturbance

Construction of the proposed project would involve pile driving and installation of cofferdams in the channel of Islais Creek. To install cofferdams within the channel, sheet piles would be placed in the water and embedded into the creek bed using a vibratory or impact hammer. These activities would disturb sediments and may result in temporary localized increases in turbidity, releases of chemicals in the sediment, decreases in dissolved oxygen, and changes to pH in the water column that could locally degrade the water quality in the project vicinity. Turbidity is a condition in which the concentration of particles suspended in the water is increased, making the water appear cloudy. The suspended sediment can potentially lower the concentration of dissolved oxygen in water, increase the salinity of the water, and decrease light penetration into the water. In addition, nutrient loading can occur as a result of resuspension

of sediments during excavation. Substantially depressed oxygen levels (i.e., below 5 milligrams per liter) can cause respiratory stress to aquatic life, and concentrations below 3 milligrams per liter can cause mortality. This could, in turn, affect certain beneficial uses and habitat for benthic organisms (bottom dwellers) and sessile organisms (organisms attached to the benthic environment), and result in other effects on other marine species. Potential water quality-related impacts to marine species are discussed in detail in Section E.15, Biological Resources. Although oxygen levels in the waters immediately around the excavation operation would be slightly reduced for a short period, tidal flushing would rapidly improve depressed oxygen levels by introducing oxygenated water into the project area.

Construction of the proposed project would also require excavation of approximately 14,000 cubic yards of sediment from the Islais Creek bed. Because excavation activities would be contained within cofferdams, few impacts on the water column during this activity would occur. Sediment would be removed using a clamshell bucket mounted on a crane or an excavator staged on the shoreline and would be transferred to an adjacent scow barge or haul truck for transport to one of the staging areas. During shoreline excavation outside of a cofferdam or transfer of sediment between the cofferdam and adjacent scow barge, there is potential for sediment to enter the water column. The sediment removed from Islais Creek could be contaminated with some of the same pollutants that currently impair Islais Creek and the central San Francisco Bay (refer to Section E.18, Hazards and Hazardous Materials, for more details).[276]

As described in Section A, Project Description, the SFPUC is required to obtain permits/authorizations with the army corps under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act, the State Water Resources Control Board under section 401 of the Clean Water Act, and the BCDC under the McAteer-Petris Act. These permits establish water quality thresholds and require implementation of standard and project-specific measures to protect water quality. The measures include, but are not limited to, no placing or storing of debris, rubbish, soil, silt, or other construction-related materials or wastes in areas where they could enter Islais Creek, and implementation of measures to prevent accidental discharges to waters during fueling, cleaning, and maintenance. Compliance with regulations and the requirements of these permits would ensure that water quality impacts from in-channel construction activities would be less than significant.

Operation

Following installation of the proposed replacement pipelines, the southeast outfall system would continue existing operations for conveyance of treated wastewater effluent. As discussed in Section A.4, Project Purpose and Need, the proposed project is being implemented to prevent wastewater discharges into Islais Creek that would violate water quality standards or waste discharge requirements. No new activities that could result in impacts to water quality during operation would occur and there would be no impact.

[276] AGS, *Geotechnical Data Report for the Southeast Outfall (SEO) Islais Creek Crossing Replacement Project, San Francisco, CA,* June 2020.

Impact HY-2: The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (Less than Significant)

Construction

The components of the proposed project that would require excavation and dewatering of groundwater would be located along the shoreline where shallow groundwater is brackish. Brackish water occurs where seawater mixes with fresh water. Because it has higher salinity than fresh water, it is not suitable for drinking or most industrial purposes. Furthermore, any effects related to lowering the water table due to dewatering would be temporary and localized and would not substantially deplete groundwater resources. As a result, construction impacts on groundwater resources would be less than significant.

Operation

The proposed project would not require dewatering during operation of the proposed project. The proposed project would create approximately 0.09 acre of new impervious surfaces. Because this represents a negligible increase in impervious surfaces and the groundwater basin is influenced by the bay, the proposed project would not deplete groundwater resources or significantly interfere with *groundwater recharge*[277]. The impact on groundwater resources would be less than significant.

Impact HY-3: The proposed project would not substantially alter the existing drainage patterns of the site or area, including through alteration of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. Result in substantial erosion and siltation on- or off-site. (Less than Significant)

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite. (Less than Significant)

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. (Less than Significant)

iv. Impede or redirect flood flow. (Less than Significant)

Construction

Erosion and Siltation

Excavation activities would occur along the shoreline to accommodate vault installations at both the northern and southern banks. Trenching would also be required along the banks of Islais Creek for pipeline and conduit installation. These earthmoving activities would not alter the drainage patterns of the site because the area would continue to drain to the adjacent Islais Creek Channel; however, the activities have the potential to result in erosion and siltation impacts. These impacts are addressed under Impact HY-1.

[277] Inflow to aquifers from precipitation, infiltration, through-flow, and/or other means that replaces groundwater lost through pumping or other forms of discharge. The process of water being added to the saturated zone or the volume of water added by this process.

During construction, the SFPUC would implement SFPUC Standard Construction Measure 3 (Water Quality), which requires the implementation of site-specific erosion and sediment controls (e.g., fiber rolls and/or gravel bags around storm drain inlets, silt fences) that would prevent discharges of sediment into storm drains and all surface water ways, including Islais Creek. This measure, in combination with compliance with permit requirements as further described under Impact HY-1, would minimize potential for erosion and siltation. As such, impacts associated with erosion and siltation on- or off-site would be less than significant.

Stormwater Drainage Systems

The project site, Islais Creek Park staging area, and portions of the Rankin Street staging area drain directly to Islais Creek and do not drain to a stormwater drainage system. Pier 80 and the Pier 94 Backlands, Pier 94/96, and Pier 96 staging areas drain into the separate sewer system, in which stormwater and sewage travel in a separate set of pipelines. Stormwater runoff drains from the separate system untreated directly to the San Francisco Bay. Stormwater drainage from these areas would have no impact on stormwater drainage capacity. Stormwater from the Illinois Street and Tennessee Street staging areas and portions of the Rankin Street staging area would drain to the combined sewer system, which collects and treats both wastewater and stormwater. Use of these staging areas would not introduce impervious surfaces or require grading that could substantially alter the drainage patterns of these areas and that could result in increased runoff. Impacts would be less than significant.

Flood Flows

The establishment of cofferdams and shored excavations within the project site would temporarily alter drainage patterns in the channel and creek banks. Due to the width of Islais Creek, temporary cofferdams would not impede or redirect flood flows to adjacent properties. Several staging areas are located in flood hazard areas, but no temporary structures would be constructed that could impede or redirect flood flows at the proposed staging areas. During construction, surface runoff from the project site and staging areas would not increase and exacerbate flooding on- or off-site. Project construction would not result in flooding or the impedance of flood flows; the impact would be less than significant.

Operation

Erosion, Siltation, and Stormwater Drainage Systems

Upon completion of construction, disturbed areas along both the northern and southern banks would be restored and further stabilized with bank and slope protection (such as riprap) and a permanent sheet pile wall would be installed along the southern bank, which would reduce long-term potential for erosion and siltation. Similarly, in-channel mudline elevations would be recontoured and graded to match approximate pre-construction conditions. New riprap would remain along both banks and a sheet pile wall would remain along the southern bank, nominally altering localized drainage patterns; however, the project area would continue to drain to Islais Creek. Concrete vaults would be located on the north and south banks of Islais Creek, increasing impervious surfaces by a total of approximately 0.09 acre. The negligible increase in impervious surface would not result in a noticeable increase in stormwater discharge or polluted runoff. Impacts related to erosion, siltation, and stormwater drainage systems would be less than significant.

Flood Flows

Runoff from the approximately 0.09 acre of new impervious surfaces would flow into Islais Creek and would have a negligible contribution to flooding effects in the project area. The proposed project would involve installation of a sheet pile wall and riprap, altering the configuration of southern Islais Creek shoreline; however, the overall capacity and ability for Islais Creek to convey flood flows would not be impeded. The proposed project would not change the existing topography of the project site such that flood flows would be redirected significantly.

The proposed project would have a functional life of approximately 50 years. When the combined effects of a 100-year storm surge and the medium-high risk projected 4.5 feet of sea level rise in 2080 are considered, the shoreline in the project area could be overtopped with inundation up to 6 feet.[278] Unless adequate flood protection measures are implemented during the interim period, some of the proposed project components located in upland areas would be within the 100-year flood zone with 4.5 feet of projected sea level rise in 2080. The proposed electrical appurtenances would be designed to accommodate periodic flooding and inundation[279] due to projected sea level rise and future storm surge elevations for the 50-year functional life of the proposed project. Operation of the proposed project would not exacerbate flooding associated with sea level rise. As such, the impact on flooding and flood flows would be less than significant.

Impact HY-4: The proposed project would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones. (Less than Significant)

Construction

The proposed project site and staging areas are located within a potential tsunami inundation zone[280], and flood hazard zones, as discussed under Impact HY-3. Sediment and materials excavated during construction would be temporarily stockpiled in staging areas. Project site sediment contain some contaminants (refer to Section E.18, Hazards and Hazardous Materials, for more details).[281] Impact HY-1 analyzes impacts on water quality from construction activities. In the event of a tsunami or flood, stockpiles of contaminated sediment or construction chemicals, such as diesel and gasoline, could be swept into Islais Creek and the central San Francisco Bay. To limit the potential for release of polluted sediments into Islais Creek for this project given the presence of contaminated soils, excavated sediments would be stored in roll-off storage containers and stockpiled sediments would be covered with plastic sheeting or tarps, have berms installed around the perimeter, and plastic sheeting installed beneath the stockpile if placed on pervious surfaces. Excavated materials would only be temporarily maintained onsite prior to disposal at landfill facilities (as described in Section A, Project Description, and Section E.13, Utilities and Service Systems). Construction materials and chemicals would also be stored within appropriate containment systems. With appropriate containment of excavated sediments and construction chemicals and the low

278 San Francisco Public Utilities Commission. (2015, March). Climate Stressors and Impacts: Bayside Sea Level Rise Mapping Final Technical Memorandum.

279 GHD AGS JV. (2019, January 31). Southeast Bay Outfall (SEO) Islais Creek Crossing Replacement Design Criteria Report.

280 City and County of San Francisco. (2012, October). Community Safety. *San Francisco General Plan*.

281 AGS, *Geotechnical Data Report for the Southeast Outfall (SEO) Islais Creek Crossing Replacement Project, San Francisco, CA,* June 2020.

likelihood that a flood or tsunami would occur during the construction period, the potential for the proposed project to contribute a substantial quantity of pollutants in the event of inundation would be less than significant.

Operation

No contaminated stockpiles or hazardous materials would remain onsite during operation of the proposed project. Project operation would not include the storage or use of hazardous materials. Therefore, no operational impact would occur.

Impact HY-5: The proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (Less than Significant)

The San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) identifies beneficial water uses, water quality objectives to protect the designated beneficial water uses, and strategies and time schedules to achieve the water quality objectives. The Basin Plan identifies 19 beneficial uses that apply to key waterbodies. Water quality objectives for surface waters encompass features such as bacteria levels, sediment, pH, and temperature. Strategies include *Total Maximum Daily Loads*[282] required by the Clean Water Act for waterbodies where water quality standards are not currently met.[283]

A project could interfere with the Basin Plan by degrading water quality in such a way that identified water quality objectives or strategies are not met and beneficial uses are adversely affected or not achieved. The Basin Plan identifies beneficial uses for the central San Francisco Bay, which is downstream from Islais Creek. No sustainable groundwater management plan has been prepared for Islais Valley Groundwater Basin.

As analyzed under Impact HY-1, the proposed project has the potential to affect water quality. Sediment removal and excavation activities could result in sedimentation of Islais Creek and ultimately the central San Francisco Bay. Sediment in the project area was found to have elevated concentrations of contaminants such as PCBs during sampling (refer to Section E.18, Hazards and Hazardous Materials, for more details).[284] Increased concentrations of sediment, contaminants, and nutrient loads in Islais Creek and ultimately the central San Francisco Bay, as a result of project construction, potentially could result in a conflict with the Basin Plan. Release of sediment and contaminated sediment could conflict with the Total Maximum Daily Loads, objectives, and ultimately beneficial uses identified for the central San Francisco Bay. Compliance with permit requirements, as described under Impact HY-1 above, would require that potential discharges containing sediment and contaminants meet water quality objectives and the impact would be less than significant.

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282 A Total Maximum Daily Load is the calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant.

283 San Francisco Regional Water Quality Control Board, San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan), January 18, 2007.

284 AGS, *Geotechnical Data Report for the Southeast Outfall (SEO) Islais Creek Crossing Replacement Project, San Francisco, CA,* June 2020.

As described in Section A, Project Description, leaks were detected along the existing 36-inch-diameter pipeline in 2015, 2017, and 2018. The purpose of the proposed project is to permanently replace the deteriorated pipelines, make necessary upgrades to the associated system to avoid any further unpermitted discharges to the creek, and ensure compliance with it the SFPUC's NPDES permit for discharging treated wastewater effluent to San Francisco Bay. As such, implementation of the proposed project would result in the long-term protection of water quality in the bay.

Impact C-HY: The proposed project, in combination with cumulative projects in the site vicinity, would not have a significant cumulative impact on hydrology and water quality. (Less than Significant)

The geographic scope for potential cumulative impacts on hydrology and water quality encompasses the project area and water bodies that could be affected by activities in the project area. Specifically, the geographic scopes include (1) the Islais Valley Groundwater Basin for impacts related to groundwater, and (2) Islais Creek and central San Francisco Bay for potential surface water impacts.

Water Quality, Water Quality Standards, and Waste Discharge Requirements

Construction and operational activities associated with the cumulative projects located within the geographic scope, listed in Table 3, p. 38 and shown in Figure 6, p. 37, either drain directly into Islais Creek and the central San Francisco Bay, or drain into sewer systems that ultimately drain into the San Francisco Bay. Islais Creek and the central San Francisco Bay are currently impaired waterbodies with levels of several types of pollutants in excess of standards.[285]

Cumulative projects and the proposed project could further exacerbate the high pollutant levels in Islais Creek through erosion and sedimentation from construction site activities or stormwater runoff to the storm drain system and waterways, accidental releases of chemicals and fuels, or discharges of dewatering waste. The cumulative projects and the proposed project would all be subject to applicable water quality regulatory requirements and would be required to comply with article 4.2 the San Francisco Public Works Code, which requires an erosion and sediment control plan, or the Construction General Permit for projects that disturb more than 1 acre. The erosion and sediment control plan and Construction General Permit would require implementation of best management practices for the management of construction wastewater and stormwater runoff, which may include use of straw wattles, sandbags, and silt fencing that would control erosion and sedimentation during construction and prevent discharge of soils into stormwater runoff. Compliance with regulatory requirements and permits would minimize potential impacts on water quality. The proposed project and the cumulative SFPUC projects would also implement SFPUC Standard Construction Measures 3 (Water Quality) and 6 (Hazardous Materials), which would reduce the potential cumulative impact on water quality. Therefore, the proposed project, in combination with other projects, would have a less-than-significant cumulative impact on water quality.

[285] State Water Resources Control Board, *Final 2014/2016 California Integrated Report (Clean Water Act ection 303(d) List/305(b) Report),* April 11, 2018, *https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml*

Groundwater

Groundwater dewatering would be required during the construction of the proposed project and the cumulative projects identified in Table 3, p. 38 and shown in Figure 6, p. 37. Construction of several cumulative projects, including the Southeast Treatment Plant Projects and the Islais Creek Bridge Rehabilitation Project, would overlap with the construction of the proposed project. Dewatering of groundwater associated with the cumulative projects would not involve sufficient volumes or be at sufficient depths to deplete groundwater resources in the project vicinity. Cumulative dewatering of groundwater would occur in the Islais Valley Groundwater Basin, which is not suitable for drinking, or along the shoreline where groundwater would be brackish and not generally suitable for even industrial purposes. Furthermore, any cumulative effects related to lowering the water table due to dewatering would be temporary and localized and would not be expected to substantially deplete groundwater resources during construction of the cumulative projects. The cumulative projects would be subject to the same groundwater dewatering requirements as the proposed project, and dewatering would only occur during construction. No groundwater dewatering would occur during operation for the cumulative projects. In the long term, cumulative development in the project area would increase the amount of impervious surfaces in the project vicinity. Due to the largely developed nature of the proposed project area, the incremental increase in impervious surfaces would have minimal impacts on groundwater recharge in light of the largely developed nature of the project area and the Islais Valley Groundwater Basin is not used as a municipal water supply. The proposed project, in combination with other projects, would have a less-than-significant cumulative impact on groundwater recharge and supplies.

Stormwater and Flood Flows

In the long term, cumulative development in the project area could increase the amount of impervious surfaces in the project vicinity (which is largely developed with impervious surfaces already) and an intensification of various types of land uses, leading to a cumulative increase in stormwater and wastewater generation, and an increase in polluted runoff and stormwater discharges. The cumulative projects would implement best management practices as required by an erosion and sediment control plan or the Construction General Permit and low-impact development measures to reduce the flow rate and volume of stormwater entering the combined sewer system, thereby reducing the frequency of *combined sewer overflows*[286], minimizing flooding effects, and protecting water quality. As discussed in Impact HY-3, the proposed project site drains directly to Islais Creek and, therefore, would not contribute to a cumulative impact on stormwater drainage capacity. Furthermore, the proposed project would not change the existing topography of the project site such that flood flows would be redirected. The proposed project, in combination with other projects, would have a less-than-significant cumulative impact on stormwater drainage systems and flood flows.

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[286] A wet-weather discharge from a combined sewer system that occurs in response to rainfall, because the carrying capacity of the collection and storage system is exceeded.

E.18. HAZARDS AND HAZARDOUS MATERIALS

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
18. HAZARDS AND HAZARDOUS MATERIALS—Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 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?	☐	☐	☐	☐	☒

The nearest public airport to the project site is San Francisco International Airport, which is approximately 7.5 miles to the south of the proposed project. The project site is not located within one-quarter mile of an existing or proposed school, in an airport land use plan area, or within 2 miles of a public airport or public use airport; therefore, Topics E.18(c) and E.18(e) are not applicable to the proposed project and are not discussed further. The proposed project is not located in or near wildlands; therefore, Topic E.18(g) is not applicable to the proposed project and is not discussed further.[287]

[287] U.S. Forest Service, *Wildland-Urban Interface for 2010*, November 23, 2018, *https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=bfec19a14d96451eb3a04e52c4537dee.*

Impact HZ-1: The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (Less than Significant)

Construction

Accidental Spills

Project construction would require the routine use of hazardous materials such as fuels, lubricants, paints, and solvents for motorized heavy equipment, such as excavators, bulldozers, and backhoes. Minor maintenance activities and refueling of equipment and vehicles from mobile or stationary fuel supply sources could occur at the project work area and proposed staging areas during construction. If not properly managed, the routine transport, use, and disposal of hazardous materials could pose a threat to human health or the environment. For example, hazardous materials have the potential to be spilled accidentally during maintenance, refueling, or servicing of equipment and vehicles. Improperly disposed of, spilled, or leaking hazardous materials could create a significant hazard to workers, the public, or the environment.

Hazardous materials handling, disposal, and transportation must occur in accordance with applicable federal, state, and local regulations. The Federal Resource Conservation and Recovery Act governs hazardous material disposal, ensuring that only facilities permitted to accept the specific waste are used. Transportation of hazardous materials must comply with the Resource Conservation and Recovery Act and U.S. Department of Transportation regulations. In addition to federal regulations, workers handling hazardous materials are required to adhere to California Occupational Safety and Health Administration health and safety requirements, which include preparation and implementation of emergency evacuation plans and health and safety plans, safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Title 8 of the California Code of Regulations requires employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings. Title 8 also includes hazard communication program regulations that contain worker safety training and hazard information requirements, procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparing health and safety plans to protect workers. In addition to complying with mandatory regulatory requirements, potential impacts would be further reduced by implementing SFPUC Standard Construction Measure 6 (Hazardous Materials), which specifies measures to prevent the release of hazardous materials used during construction, such as storing hazardous materials pursuant to manufacturer recommendation, maintaining spill kits onsite, and containing any spills that occur to the extent safe and feasible, followed by collection and disposal in accordance with applicable laws. SFPUC Standard Construction Measure 6 (Hazardous Materials) also specifies that the SFPUC must report spills of reportable quantity to applicable agencies. Compliance with regulatory requirements and implementation of SFPUC Standard Construction Measure 6 (Hazardous Materials) would minimize potential impacts related to the routine transport, use, or disposal of hazardous materials and reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As a result, the impact would be less than significant.

Potential Exposure to Contaminated Soil or Groundwater

The project site is located in proximity to I-280 (a potential historical source of aerially deposited lead), current and historical industrial uses, and areas of undocumented fill material. According to the Geotechnical Data Report prepared for the proposed project, soil samples were collected from the project site within Islais Creek Channel and tested for presence of several types of contaminants. All sampled materials had contamination above reporting limit levels for several polycyclic aromatic hydrocarbons, poly-chlorinated biphenyls (PCBs), dioxin and furon compounds, California Title 22 metals, and hexavalent chromium. Concentrations of pesticides were found to be low or non-existent[288] except for Dichlorodiphenyldichloroethylene (4,4'-DDE).[289] The proposed project would require the removal of potentially contaminated soils and excavation and construction activities would disturb soils throughout the project site. Ground-disturbing construction activities could accidentally release hazardous soils or groundwater into adjacent areas including Islais Creek. As described in Section A.6.15, Dewatering and Discharge Plan, above, dewatering fluids would be pumped into baker tanks, if necessary, to allow for sediment settling and treatment prior to being discharged back into Islais Creek in accordance with the applicable permits. Excavated sediments would be stored in roll-off storage containers or stockpiled. Stockpiled sediments would be covered with plastic sheeting or tarps, have berms installed around the perimeter, and plastic sheeting installed beneath the stockpile to prevent contamination of clean soils, thereby minimizing the risk of accidental release. Once excavated sediments dry, samples would be taken for chemical analysis to determine appropriate disposal methods and location. As further described in Section A.6.14, Sediment Storage and Disposal, contaminated sediments would be transferred either by truck or rail to the nearest landfill that is licensed to accept the waste.

The SFPUC would be required to handle contaminated soil and groundwater excavated from the creek in accordance with all laws for hazardous waste operations. In addition to San Francisco Bay Regional Water Quality Control Board regulations, the SFPUC would be required to remove contaminated sediments excavated from the upland areas and demonstrate to the San Francisco Department of Public Health that remediation achieves the approved cleanup goals. Specifically, the proposed project is subject to article 22A of the health code, also known as the Maher Ordinance, which is administered and overseen by the San Francisco Department of Public Health. Pursuant to the Maher Ordinance, the SFPUC would retain the services of a qualified professional to prepare a *phase I environmental site assessment* that meets the requirements of Health Code section 22.A.6. The phase I assessment would determine the potential for site contamination and level of exposure risk associated with the proposed project. Based on the findings, SFPUC may be required to conduct additional soil and/or groundwater sampling and analysis. Where such analysis reveals the presence of hazardous substances in excess of state or federal standards, the SFPUC would be required to prepare a site mitigation plan to be provided to the San Francisco Department of Public Health or other appropriate state or federal agency(ies) describing the methods that would be implemented to handle and dispose of contaminated materials to prevent impacts to public health and the environment. Furthermore, in accordance with SFPUC Standard Construction Measure 6 (Hazardous Materials), the SFPUC would develop and implement a plan for treating, containing, or removing the

[288] All concentrations were below Method Detection Limits, meaning the concentrations of the pesticides were below levels distinguishable from method blank results.

[289] AGS, *Geotechnical Data Report for the Southeast Outfall (SEO) Islais Creek Crossing Replacement Project, San Francisco, CA,* June 2020.

hazardous soil in accordance with applicable regulations to avoid any adverse exposure to the material during and after construction. With adherence to regulatory requirements and implementation of SFPUC Standard Construction Measure 6 (Hazardous Materials), potential impacts to the public and environment associated with exposure to or disposal of contaminated soil or groundwater would be less than significant.

Operation

The proposed project would involve continued operation of the replacement pipelines and infrastructure associated with the SFPUC's existing wastewater system. Operation and maintenance activities would not require the use of hazardous materials or exposure to contaminated soil or groundwater. No impact would occur.

Impact HZ-2: The project would not 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. (Less than Significant)

Based on searches using the State Water Resources Control Board GeoTracker database,[290] the California Department of Toxic Substances Control EnviroStor database,[291] and the State Water Resources Control Board list of active cease and desist orders and cleanup and abatement orders, no open hazardous materials sites are located in the project area. Several closed leaking underground storage tank sites are located along Third Street and on the north bank of Islais Creek. Construction and operation of the proposed project would not disturb any open hazardous sites. Islais Creek is currently designated a toxic hot spot by the San Francisco Bay Regional Water Quality Control Board due to elevated levels of ammonia, dieldrin, hydrogen sulfide, polycyclic aromatic hydrocarbons, and chlordane. Compliance with all applicable federal, state, and local regulations and implementation of SFPUC Standard Construction Measure requirements, as described under Impact HZ-1, would minimize risk of hazard to the public or environment from hazardous materials in soil and groundwater and impacts would be less than significant.

Impact HZ-3: The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

Construction

The proposed project is not anticipated to interfere with the San Francisco Emergency Response Plan,[292] because the plan does not designate emergency response or evacuation routes. The proposed project would not otherwise impair implementation of this plan. However, the proposed project would have a significant impact on implementation of emergency response or emergency evacuation if construction activities were to interfere with emergency response vehicle travel or restrict access to critical facilities such as hospitals or fire stations.

Construction of the proposed project would require closure of the two lanes on the Islais Creek Bridge (southbound or northbound) for approximately nine months during night work and closure of two travel

290 SWRCB, *GeoTracker*, October 25, 2018, *https://geotracker.waterboards.ca.gov/*.

291 DTSC, *EnviroStor*, October 25, 2018, *https://www.envirostor.dtsc.ca.gov/public/*.

292 City and County of San Francisco, *Emergency Response Plan, an Element of the CCFS Emergency Management Program,* May 2017.

lanes (southbound) during the day and at night for a three-week period. Traffic from the closed lanes would be rerouted to Illinois Street or Cesar Chavez Street and Evans Avenue. During the nighttime closure of the two lanes, evacuation and emergency access would be maintained in the event of an emergency because traffic would be rerouted to nearby Illinois Street or Cesar Chavez Street and Evans Avenue.

As part of the proposed project, the SFPUC would implement Standard Construction Measure 4, which would require implementation of traffic control measures sufficient to maintain traffic and pedestrian circulation on streets affected by construction activities, as well as coordination with local emergency responders to maintain emergency access. These measures would conform to the municipal transportation agency's blue book, which would specify the circulation and detour plans during construction and require the contractor to notify the police and emergency responders of any lane closure and traffic control measures to be implemented. Compliance with the requirements of municipal transportation agency and San Francisco Public Works permits and implementation of SFPUC Standard Construction Measure 4 (Traffic) would minimize potential impacts to emergency response and evacuation. As a result, the impact would be less than significant.

Operation

The proposed project would not permanently alter the existing street network, and therefore operation of the proposed project would not alter emergency evacuation/response access routes. No impact would occur.

Impact C-HZ: The proposed project, in combination with cumulative projects, would not have a substantial cumulative impact on hazards and hazardous resources. (Less than Significant)

The geographic scope for cumulative impacts related to hazards encompasses the project site, staging areas, and immediate vicinity because the effects of hazardous materials releases are generally highly localized due to the need to quickly contain any spills or to the site-specific nature of contamination at hazardous materials sites. As such, the geographic scope includes the following: Pier 94 Backlands, Pier 94, and Pier 96 Projects, Islais Creek Bridge Rehabilitation Project, and Islais Creek North Combined Sewer Discharge Condition Improvement and Backflow Prevention Project.

The cumulative projects have the potential to result in impacts from use of hazardous materials for construction and operation. These cumulative projects may involve the handling and transport of contaminated soils and be located within an area containing contaminated soils and groundwater. Any potential hazards occurring at these cumulative project sites would be subject to the same safety and/or remediation regulations and ordinances required for the proposed project, which would reduce potential cumulative hazards.

Lane and road closures for the cumulative projects, in particular the Islais Creek Bridge Rehabilitation Project, may also present hazards related to impairment of emergency response if they overlap with the proposed project and cause conflicting detours or substantial traffic delays for emergency responders or impaired access to transit. As discussed in Section E.6, Transportation and Circulation, the proposed project and Islais Creek Bridge Rehabilitation Project would comply with construction transportation regulations such as the Blue Book, Special Traffic Permit, and implementation of SFPUC Standard Construction Measure 4 (Traffic) and Public Works Standard Construction Measure 4 (Traffic), resulting in less-than-significant

cumulative impacts on emergency response. As such, the proposed project in combination with other projects, would have a less-than-significant cumulative impact related to hazards and hazardous materials.

E.19. MINERAL RESOURCES

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
19. 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?	☐	☐	☐	☐	☒

In accordance with the Surface Mining and Reclamation Act of 1975, the California Department of Conservation, Division of Mines and Geology, currently known as the California Geological Survey, has mapped non-fuel mineral resources of the state to show where economically significant mineral deposits are either present or likely to occur, based on the best available scientific data. The proposed project and potential staging areas are mapped by the California Department of Conservation, Division of Mines and Geology, as Mineral Resource Zone 1, indicating that substantial mineral resources do not occur within these areas.[293] Furthermore, the general plan does not identify any important mineral resource recovery sites in San Francisco.[294] For these reasons, Topics 19(a) and 19(b) are not applicable to the project and are not discussed further.

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[293] California Department of Conservation, Division of Mines and Geology, *Mineral Land Classification: Aggregate Materials in the San Francisco-Monterey Bay Area*, Special Report 146, part II, 1987, *http://maps.conservation.ca.gov/cgs/informationwarehouse/*.

[294] San Francisco Planning Department, *San Francisco General Plan*, June 27, 1996, *http://generalplan.sfplanning.org*.

E.20. ENERGY

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
20. ENERGY—Would the project:					
a) Result in a 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?	☐	☐	☒	☐	☐

Impact EN-1: The proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. (Less than Significant)

Construction

Construction of the proposed project would require the use of fuel- and electric-powered equipment and vehicles for construction activities. The vast majority of project construction activities would rely on fuel-powered equipment and vehicles that would consume gasoline or diesel fuel. Heavy construction equipment (e.g., cranes, pile drivers, dump trucks, backhoes, loaders, tugboats, etc.) and generators would be diesel powered, while smaller construction vehicles, such as pickup trucks and small boats, would be gasoline powered. The precise amount of fuel required for project construction is uncertain; however, it is expected that the quantity of gasoline and diesel used for construction equipment, as well as workers' vehicles and haul vehicles, would be comparable to the quantity used for similar construction projects. The majority of electric power usage would result from operation of several electric pumps during removal of water and sediment from the area of the cofferdams. Electric power would be obtained from generators. The construction contractor would have a financial incentive to use fuel and energy efficiently because excess usage would reduce profits. In addition, the San Francisco Clean Construction Ordinance restricts the idling time of all on-road and stationary diesel construction equipment to two minutes, thereby limiting any potential wasteful use of fuel during idling. Additionally, all off-road, land-based equipment would be outfitted with Tier 4 engines as part of the proposed project's compliance with the Clean Construction Ordinance. Fuel and energy usage during construction would not be wasteful or inefficient, and the impact from construction fuel and energy usage would be less than significant.

Operation

Operation of the new equipment, such as the flow meters, sump pumps, and interior lights (within the southern vault) would require the use of electricity. However, the level of energy consumption resulting from operation of this equipment is anticipated to be comparable to the level of energy usage from operation of the existing pipeline. The proposed vault equipment, which would be used intermittently during operation, would include energy-efficient designs. The project would not result in an inefficient or wasteful use of energy. The impact from energy usage during project operation would be less than significant.

Impact EN-2: The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (Less than Significant)

California's renewable energy and energy efficiency plans include the Renewables Portfolio Standard Program (as revised by Senate Bill X1-2), which requires utilities to increase their renewable energy generation to 33 percent by 2020, and the California Energy Efficiency Strategy Plan, which was developed to provide a roadmap for energy efficiency in California through the year 2020 and beyond. At a local level, the majority of the City and County of San Francisco's energy-efficiency requirements are geared toward commercial and residential development. The proposed project would involve replacement or upgrade of effluent pipelines for treated wastewater as well as the infrastructure associated with the SFPUC's existing system. The proposed project would require minimal energy usage and use energy-efficient equipment, in compliance with the program and plan. The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Therefore, impacts would be less than significant.

Impact C-EN: The proposed project, in combination with the cumulative projects, would result in less-than-significant cumulative impacts related to energy. (Less than Significant)

The geographic scope for potential cumulative impacts on energy resources consists of the project vicinity as well as the broader region. All current and proposed projects in San Francisco require the use of fuel and energy for construction and potentially operation. However, the projects are required to promote energy efficiency to the extent possible, consistent with applicable building codes, standards, and regulations, including City and County of San Francisco energy-efficiency requirements. In addition, project contractors have a financial incentive to use fuel and energy efficiently during construction. Operation of the proposed project would require an amount of energy comparable to the amount used for operation of the existing pipeline, as described in Impact EN-1. Therefore, the proposed project, in combination with the cumulative projects, would have a less-than-significant cumulative impact on energy and energy resources.

E.21. AGRICULTURE AND FOREST RESOURCES

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
21. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on 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 the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. **—Would the project**					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☐	☒
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 forestland to non-forest use?	☐	☐	☐	☐	☒
e) Involve other changes in the existing environment that, because of their location or nature, could result in conversion of farmland to non-agricultural use or forestland to non-forest use?	☐	☐	☐	☐	☒

The proposed project and staging areas are located in an urban area in San Francisco. The California Department of Conservation's Farmland Mapping and Monitoring Program identifies these areas as Urban and Built-Up Land, which is defined as "…land [that] is occupied by structures with a building density of at least 1 unit to 1.5 acres… Common examples include residential, industrial, commercial, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures."[295] No land within the city is zoned for forest uses; therefore, no forestland occurs on the project site. Because the proposed project's work areas and staging areas do not contain agricultural or forest uses and are not zoned for such uses, the proposed project would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses; conflict with existing zoning for agricultural land or a Williamson Act contract; or involve any changes to the environment that could result in the conversion of farmland to non-agricultural use or forestland to non-forest use. Therefore, Topics

[295] California Department of Conservation, Division of Land Resources Protection, *San Francisco Bay Area Important Farmland 2012*, September 2015.

E.21(a), E.21(b), E.21(c), E.21(d), and E.21(e) are not applicable to the proposed project and are not discussed further.

E.22. WILDFIRE

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
22. WILDFIRE — 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 wildlife or the uncontrolled spread of a wildfire?	☐	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment?	☐	☐	☐	☐	☒
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?	☐	☐	☐	☐	☒

The proposed project is not located in or near a state responsibility area or lands classified as Very High Fire Hazard Severity Zones.[296] Therefore, Topics E.22(a), E.22(b), E.22(c), and E.22(d) are not applicable to the proposed project and are not discussed further.

[296] CalFire. *Fire Hazard Severity Zones Maps. San Francisco*, 2008, *https://osfm.fire.ca.gov/divisions/wildfire-prevention-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/*.

E.23. MANDATORY FINDINGS OF SIGNIFICANCE

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
23. MANDATORY FINDINGS OF SIGNIFICANCE—Does the project:					
a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐	☐
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐	☐
c) Have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐	☐

Impact MF-1: The proposed project would not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? (Less than Significant with Mitigation)

As discussed in Section E.4, Cultural Resources, Section E.5, Tribal Cultural Resources, and Section E.15, Biological Resources, the proposed project could result in potentially significant impacts on the environment with respect to cultural resources, tribal cultural resources, and biological resources, but all of these potential impacts would be reduced to a less-than-significant level with implementation of SFPUC standard construction measures and mitigation.

As discussed in Impact BI-1, noise impacts from pile driving could result in potential impacts to special-status fish species and marine mammals. These impacts would be reduced to a less-than-significant level with the implementation of **Mitigation Measure M-BI-1: Noise Reduction and Monitoring to Protect Fish and Marine Mammals during Pile Driving**. The project would not cause any fish or wildlife population to drop below self-sustaining levels or threaten to eliminate a plant or animal community. The project would temporarily restrict aquatic species access to the area within the cofferdam within Islais Creek. Due to the small area contained within the cofferdam, potential for fish to travel around the cofferdam, and temporary nature of construction activities, the construction would not restrict the overall range of any rare

or endangered species. There would be no impact on rare or endangered species during operation of the project.

As discussed under Impact CR-3, ground disturbance associated with the proposed project could result in potential impacts to previously undiscovered archaeological resources. Implementation of SFPUC Standard Archeological Measures I and II would minimize the potential for significant impacts to archaeological resources during construction. The proposed project would not eliminate important examples of the major periods of California history or prehistory.

As discussed in Impact TC-1, ground-disturbing activities at the project site could result in potential impacts to previously undiscovered tribal cultural resources. These impacts would be reduced to a less-than-significant level with the implementation of SFPUC Standard Archeological Measures I and II**.**

Impact MF-2: The proposed project would not have impacts that would be 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 with Mitigation)

Table 3, p. 38 provides a cumulative projects list of past, present, and reasonably foreseeable actions. The geographic context for the proposed project's cumulative impact analyses is projects within 0.25 mile of the proposed project, with an expanded geographic scope (e.g., utilities service area) applied to some resource topics.

Cumulative impacts for each environmental topic are provided in the relevant subsections of Section E, Evaluation of Environmental Effects, of this Initial Study. As discussed in Section E.15, Biological Resources, the proposed project in combination with cumulative projects would result in potentially significant cumulative impacts with respect to biological resources, but these potential impacts would be reduced to a less-than-significant level with mitigation.

As discussed in Impact C-BI, vibratory pile driving has the potential to have an adverse physical impact on marine mammals and cumulative impacts to marine mammals could result if vibratory pile driving activities occurred simultaneously for the proposed project and the Islais Creek Bridge Rehabilitation Project. Implementation of **Mitigation Measure M-C-BI: Expanded Marine Mammal Safety Zones and Biological Monitoring** would reduce potential for significant cumulative impacts to less than significant.

For the reasons described above and in Topics E.1 through E.22, either there would be no potentially significant cumulative impacts or, with implementation of mitigation measures, the proposed project's contribution to the cumulative impacts on the environment would be less than cumulatively considerable.

Impact MF-3: The proposed project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly? (Less than Significant with Mitigation)

The discussion in Section E, Evaluation of Environmental Effects, identifies potentially significant impacts related to biological resources and paleontological resources. Mitigation measures have been identified in

this Initial Study to reduce all potentially significant impacts to a less-than-significant level. Impact determinations of "no impact" or "less-than-significant impact" were made for the following environmental issues: land use, aesthetics, population and housing, cultural resources, tribal cultural resources, transportation and circulation, air quality, greenhouse gas emissions, wind and shadow, recreation, utilities and service systems, public services, geology and soils, hydrology and water quality, hazards and hazardous materials, minerals, energy, agricultural and forest resources, and wildfire. Therefore, with implementation of the mitigation measures specified in Sections E.1, Land Use and Planning, through E.22, Wildfire, the proposed project would not result in substantial adverse effects, direct or indirect, on human beings.

F. MITIGATION MEASURES

The following mitigation measures have been identified to reduce potentially significant impacts resulting from the proposed project to a less-than-significant level. Accordingly, the SFPUC has agreed to implement the mitigation measures described below.

Mitigation Measure M-BI-1: Noise Reduction and Monitoring to Protect Fish and Marine Mammals during Pile Driving. The avoidance and minimization measures specific to pile driving activities, below, have been developed in accordance with the majority of the measures outlined in the 2018 U.S. Army Corps of Engineers Proposed Additional Procedures and Criteria for Permitting Projects under a Programmatic Determination of Not Likely to Adversely Affect Selected Listed Species in California (2018 NLAA), in order to reduce project effects on sensitive resources. Avoidance and minimization measures that would reduce project noise effects during pile driving shall include the following:

- All pile driving shall be conducted within the established environmental work windows between June and November in order to avoid potential impacts to special status fish species for this area of San Francisco Bay. These windows were promulgated in the Endangered Species Act section 7(a)(2) Biological Opinion for the Long-Term Management Strategy for the Placement of Dredged Material in the San Francisco Bay (National Marine Fisheries Service Consultation Number: WCR-2014-1599).

- The SFPUC shall develop an Aquatic Sound Monitoring Plan prior to the start of pile driving. This plan shall provide detail on the methods used to monitor and verify sound levels during pile driving activities, and to establish safety zones for the protection of marine mammals and procedures (such as halting work) when a marine mammal enters a Level A zone.

- Piles (including sheet piles) shall be installed primarily using pre-drilling, oscillation, rotation, and/or vibratory pile driving methods. Use of an impact hammer shall be minimized to the extent feasible.

- If use of an impact hammer is required, the project shall implement the following measures to reduce potential impacts:

    - Use of cushion blocks between hammer and piles

    - Implementation of a "soft start" technique (i.e., initial strike set at reduced energy followed by 30 second pause then another reduced energy strike set), at the start of each workday or after a break in impact hammer driving of 30 minutes or more, to give fish and marine mammals an opportunity to vacate the area

    - Operation of only a single impact hammer at a time

- A qualified biological monitor shall conduct surveys before and during pile installation/driving activities (i.e., pre-drilling, pile oscillation, pile rotation, vibratory driving,

and impact hammering). The monitor shall inspect the established work zone and adjacent bay waters and ensure the following measures are implemented during pile-installation and -driving activities:

- Maintenance of the safety zones around the sound source, as identified in the Aquatic Sound Monitoring Plan, to ensure protection of marine mammals. Safety zones shall include areas where noise-related impacts to marine mammals may occur, as described in the project-specific hydroacoustic analysis memorandum[297].
- Activities are halted when a marine mammal enters the safety zone and allowed to resume only after the animal has vacated the area for a minimum of 15 minutes.
- Maintenance of sound levels below 90 dBA in air when pinnipeds (seals and sea lions) are present.

The biological monitor shall maintain a monitoring log that shall document the following:

- A summary of daily pile-installation and -driving activities
- The results of any field sound measurements
- Any fish and marine mammal sightings
- Implementation of soft start pile-driving activities and safety zone requirements
- Any construction halts needed due to marine mammals entering safety zones

These measures may be modified during the required permitting process by the National Marine Fisheries Service and California Department of Fish and Wildlife. The final Aquatic Sound Monitoring Plan shall incorporate any requirements from these agencies.

Mitigation Measure M-C-BI: Expanded Marine Mammal Safety Zones and Biological Monitoring. In the event that the proposed project would implement pre-drilling, pile rotation, pile oscillation, and/or vibratory pile driving simultaneously with vibratory pile driving for the Public Works Islais Creek Bridge Rehabilitation Project, SFPUC shall increase the dimensions of the zones of exclusions identified in the aquatic sound monitoring plan (required under Mitigation Measure M-BI-1) by 60 percent for each pile-installation activity. All other monitoring activities and requirements per Mitigation Measure M-BI-1 shall be applied to the expanded safety zones.

Mitigation Measure M-GE-6a: Unanticipated Discovery of Paleontological Resources. Prior to commencing excavation in Islais Creek, the SFPUC shall ensure that all workers are trained on the contents of the Paleontological Resources Alert Sheet, as provided by the San Francisco Planning Department, to provide worker environmental awareness training regarding potential paleontological resources. The Paleontological Resources Alert Sheet also shall be prominently

[297] ICF. Southeast Bay Outfall Islais Creek Crossing Replacement Project Hydroacoustic Analysis Memorandum. July 2020.

displayed at the construction site during earth-moving activities. In addition, the SFPUC shall inform construction personnel of the immediate stop work procedures and contact information to be followed if bones or other potential fossils are unearthed at the project site, and the laws and regulations protecting paleontological resources. The SFPUC shall retain documentation of the worker training and location of the informational handout display.

In the event of the discovery of an unanticipated paleontological resource during construction, excavations within 25 feet of the find shall temporarily be halted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology's 2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources). The qualified paleontologist shall determine if the discovery is scientifically significant. Work within the sensitive area shall resume only when deemed appropriate by the qualified paleontologist in consultation with the planning department. If a paleontological resource assessment results in a determination that the resource is not scientifically important, this conclusion shall be documented in a brief Paleontological Evaluation Letter. The Paleontological Evaluation Letter shall be submitted to the planning department and the SFPUC within 30 days of the consultation.

If a paleontological resource is determined to be of scientific importance, the paleontologist shall notify the SFPUC and the planning department immediately. If, on consultation with the planning department and SFPUC, it is determined there are no feasible avoidance measures a Paleontological Mitigation Program (mitigation program) must be prepared by the qualified paleontologist engaged by the SFPUC. The mitigation program shall include measures to fully document and recover the resource. The mitigation program shall be submitted to the SFPUC and planning department for review and approval within 10 business days of the discovery. Earth-disturbing activities in the project area that would affect sensitive paleontological units shall be monitored at a frequency as determined by the qualified paleontologist for the duration of such activities in collaboration with the planning department, once work is resumed.

The mitigation program shall include: 1) procedures for construction monitoring at the project site; 2) fossil preparation and identification procedures; 3) curation into an appropriate repository; and 4) preparation of a paleontology report at the conclusion of earth-disturbing activities. To avoid construction delays, fully exposed fossils will be immediately removed by the paleontologist to the extent feasible. Consistent with the Society of Vertebrate Paleontology 2010 guidelines, samples of the soil matrix where the discovery occurred may need to be removed from the project site and processed elsewhere. The report shall include dates of field work, results of monitoring, fossil identifications to the lowest possible taxonomic level, analysis of the fossil collection, a discussion of the scientific significance of the fossil collection, conclusions, locality forms, an itemized list of specimens, and a repository receipt from the curation facility. The SFPUC shall be responsible for the preparation and implementation of the mitigation program, in addition to any costs necessary to prepare and identify collected fossils, and for any curation fees charged by the paleontological repository. A paleontology report shall be submitted to the planning department for review within 30 business days from conclusion of earth-moving activities, or as negotiated following consultation with the planning department.

M-GE-6b: Paleontological Monitoring in Areas of Moderate Sensitivity. A qualified paleontologist shall provide spot-checking of subsurface conditions during initial trench excavations for the seal wall and pipe installation in the middle of Islais Creek that extend into the interbedded sand layer located at approximately -50 feet elevation to provide a field assessment of locations identified as having moderate sensitivity for paleontological resources. If through field observations the sediments are determined to be unlikely to preserve fossils, then construction spot-checking shall be halted at the discretion of the qualified paleontologist in consultation with the planning department. This conclusion shall be documented in a brief Paleontological Evaluation Letter and submitted to the planning department for review within 30 days of the consultation.

If the sediments in the project area are determined to be conducive to fossil preservation, earth-disturbing activities in the project area shall continue to be spot-checked or monitored at a frequency as determined by the qualified paleontologist for the duration of such activities in consultation with the planning department. If paleontological resources are discovered, the paleontological monitor shall have the authority to temporarily redirect construction away from the discovery in order to assess its significance and a mitigation program shall be implemented, as outlined in Mitigation Measure M-GE-6a. If no paleontological resources are discovered, this conclusion shall be documented in a Paleontological Monitoring Results Letter and submitted to the planning department for review within 30 days of completion of construction monitoring.

G. PUBLIC NOTICE AND COMMENT

On February 5, 2019, the Planning Department mailed a Notification of Project Receiving Environmental Review to owners of properties within 300 feet of the project site, adjacent occupants, and neighborhood groups. A total of three comments were received. One comment was received by an individual who requested to continue receiving notices and environmental documents on the project but did not appear to have any specific concerns. One comment was received from Kayaks Unlimited requesting that access to the shoreline be maintained in Islais Creek Park, preferably on the west side of the Islais Creek Bridge, during project construction and operation. Access to Islais Creek is described in Section E.12, Recreation. One comment was received from an individual who requested information on potential street closures and other potential impacts that could affect their produce distribution business, located at 1100 Caesar Chavez, 1180 Marin Street, and 1170 Marin Street. Road closures during construction of the proposed project are described in Section E.6, Transportation and Circulation.

H. DETERMINATION

On the basis of this Initial Study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental documentation is required.

DATE 7/29/2020 Name Devyani Jain

Acting Enviromental Review Officer

I. INITIAL STUDY PREPARERS

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APPENDIX A

SFPUC Standard Construction Measures

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

OFFICE OF THE GENERAL MANAGER
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MEMORANDUM

TO: Michael Carlin, Juliet Ellis, Barbara Hale, Kathryn How, Tommy Moala, Steven Ritchie, Eric Sandler

DATE: July1, 2015

FROM: Harlan L. Kelly, Jr. General Manager

SUBJECT: SFPUC Standard Construction Measures

In 2006, the SFPUC General Manager (GM) directed SFPUC staff to incorporate the Standard Construction Measures (Measures) in all SFPUC projects via memorandum on August 16, 2006. The directive was updated and clarified on December 6, 2006. The GM updated and re-issued the Measures on February 7, 2007. The purpose then, as it is now, was for the SFPUC to adopt environmentally responsible practices to apply to all SFPUC projects.

This directive further updates the Measures. In particular, the protocol for cultural resources is included in detail in order to fully incorporate the San Francisco Planning Department's recently adopted approach to this resource area so that all SFPUC are constructed consistently with this protocol. The updated cultural resources protocols are set forth in full and are attached to this memorandum.

In addition to complying with all applicable local, State, and federal laws and regulations, these Measures are to be followed as a standard practice in the execution of every SFPUC project. While some of the Measures may not apply to a project, it is important to address each of the Measures either by implementing the Measure as described, explaining why it is not applicable to the particular project, or undertaking further investigation and developing a more detailed work plan to address the resource as provided in the resource-specific Measures. Some of the Measures are very broad and will be tailored to suit each project site and surrounding circumstances.

For projects that undergo full CEQA review (Mitigated Negative Declarations or Environmental Impact Reports) a n d / or receive resource agency permits (e.g., US Army Corps of Engineers, California Department of Fish and Wildlife, etc.), these Measures may be superseded and/or amplified with more detailed, project specific

mitigation measures or conditions stipulated in the project CEQA document and/or permits.

The Measures can be accessed at the following link:

S:\SFPUC Standard Construction Measures

The responsibility for implementation of the Standard Construction Measures rests with each Project Manager in Infrastructure and the SFPUC Enterprises. If you have any questions please contact Irina Torrey, Manager, Bureau of Environmental Management at 415-554-3232.

Please begin implementing these Measures immediately. Thank you for your cooperation.

SFPUC Standard Construction Measures

1. SEISMIC AND GEOTECHNICAL STUDIES: All projects will prepare a characterization of the soil types and potential for liquefaction, subsidence, landslide, fault displacement, and other geological hazards at the project site and will be engineered and designed as necessary to minimize risks to safety and reliability due to such hazards. As necessary, geotechnical investigations will be performed.

2. AIR QUALITY: All projects within San Francisco City (the City) limits will comply with the Construction Dust Control Ordinance. All projects outside the City will comply with applicable local and State dust control regulations. All projects within City limits will comply with the Clean Construction Ordinance. Projects outside City limits will comply with San Francisco or other applicable thresholds for health risks. All projects, both within and outside of City limits, will comply with either San Francisco or other applicable thresholds for construction criteria air pollutants.

To meet air quality thresholds, all projects (as necessary) will implement air quality controls to be tailored to the project, such as using high tier engines, Verified Diesel Emissions Control Strategies (VDECS) such as diesel particulate filters, customized construction schedules and procedures, and low emissions fuel.

3. WATER QUALITY: All projects will implement erosion and sedimentation controls to be tailored to the project site such as, fiber rolls and/or gravel bags around stormdrain inlets, installation of silt fences, and other such measures sufficient to prevent discharges of sediment and other pollutants to storm drains and all surface waterways, such as San Francisco Bay, the Pacific Ocean, water supply reservoirs, wetlands, swales, and streams. As required based on project location and size, a Stormwater Control Plan (in most areas of San Francisco) or a Stormwater Pollution Prevention Plan (SWPPP) (outside of San Francisco and in certain areas of San Francisco) will be prepared. If uncontaminated groundwater is encountered during excavation activities, it will be discharged in compliance with applicable water quality standards and discharge permit requirements.

4. TRAFFIC: All projects will implement traffic control measures sufficient to maintain traffic and pedestrian circulation on streets affected by construction of the project. Traffic control measures may include, but not be limited to, flaggers and/or construction warning signage of work ahead; scheduling truck trips during non-peak hours to the extent feasible; maintaining access to driveways, private roads, and off-street commercial loading facilities by using steel trench plates or other such method; and coordination with local emergency responders to maintain emergency access. For projects in San Francisco, the measures will also, at a minimum, be consistent with the requirements of San Francisco Municipal Transportation Agency (SFMTA)'s Blue Book. Any temporary rerouting of transit vehicles or relocation of transit facilities would be coordinated with the applicable transit agency, such as SFMTA Muni Operations in San Francisco. All Projects will obtain encroachment permits from the applicable jurisdiction for work in public roadways.

5. NOISE: All projects will comply with local noise ordinances regulating construction noise. The SFPUC shall undertake measures to minimize noise disruption to nearby neighbors and sensitive receptors during construction. These efforts could include using best available noise control technologies on equipment (i.e., mufflers, ducts, and acoustically attenuating shields),

locating stationary noise sources (i.e., pumps and generators) away from sensitive receptors, erecting temporary noise barriers, and other such measures.

6. HAZARDOUS MATERIALS: Where there is reason to believe that site soil or groundwater that will be disturbed may contain hazardous materials, the SFPUC shall undertake an assessment of the site in accordance with any applicable local requirements (e.g., Maher Ordinance) or using reasonable commercial standards (e.g., Phase I and Phase II assessments, as needed). If hazardous materials will be disturbed, the SFPUC shall prepare a plan and implement the plan for treating, containing or removing the hazardous materials in accordance with any applicable local, State and federal regulations so as to avoid any adverse exposure to the material during and after construction. In addition, any unidentified hazardous materials encountered during construction likewise will be characterized and appropriately treated, contained or removed to avoid any adverse exposure. Measures will also be implemented to prevent the release of hazardous materials used during construction, such as storing them pursuant to manufacturer recommendation, maintaining spill kits onsite, and containing any spills that occur to the extent safe and feasible followed by collection and disposal in accordance with applicable laws. SFPUC will report spills of reportable quantity to applicable agencies (e.g., the Governor's Office of Emergency Services).

7. BIOLOGICAL RESOURCES: All project sites and the immediately surrounding area will be screened to determine whether biological resources may be affected by construction. A qualified biologist will also carry out a survey of the project site, as appropriate, to note the general resources and identify whether habitat for special-status species and/or migratory birds, are present. In the event further investigation is necessary, the SFPUC will comply with all local, State, and federal requirements for surveys, analysis, and protection of biological resources (e.g., Migratory Bird Treaty Act, federal and State Endangered Species Acts, etc.). If necessary, measures will be implemented to protect biological resources, such as installing wildlife exclusion fencing, establishing work buffer zones, installing bird deterrents, monitoring by a qualified biologist, and other such measures. If tree removal is required, the SFPUC would comply with any applicable tree protection ordinance.

8. VISUAL AND AESTHETIC CONSIDERATIONS, PROJECT SITE: All project sites will be maintained in a clean and orderly state. Construction staging areas will be sited away from public view where possible. Nighttime lighting will be directed away from residential areas and have shields to prevent light spillover effects. Upon project completion, project sites on SFPUC-owned lands will be returned to their general pre-project condition, including re-grading of the site and re-vegetation or re-paving of disturbed areas to the extent this is consistent with SFPUC's Integrated Vegetation Management Policy. However, where encroachment has occurred on SFPUC-owned lands, the encroaching features may not be restored if inconsistent with the SFPUC policies applicable to management of its property. Project sites on non-SFPUC land will be restored to their general pre-project condition so that the owner may return them to their prior use, unless otherwise arranged with the property owner.

9. CULTURAL RESOURCES: All projects that will alter a building or structure, produce vibrations, or include soil disturbance will be screened to assess whether cultural resources are or may be present and could be affected, as detailed below.

Archeological Resources. No archeological review is required for a project that will not entail ground disturbance. Projects involving ground disturbance will undergo screening for

archeological sensitivity as described below and implement, as applicable, SFPUC's Standard Archeological Measures I (Discovery), II (Monitoring) and III (Testing/Data Recovery) per the Cultural Resources Attachments. Standard Construction Measure I will be implemented on all projects involving ground disturbance and Standard Archeological Measures II and III will be implemented based on the screening process described below for projects assessed as having the potential to encounter archeological sites and/or if an archeological discovery occurs during construction.

Projects involving ground disturbance will initially be screened to identify whether there is demonstrable evidence of prior ground disturbance in the project site to the maximum vertical and horizontal extent of the current project's planned disturbance. For projects where prior complete ground disturbance has occurred throughout areas of planned work, SFPUC will provide evidence of the previous disturbance in the Categorical Exemption application and no further archeological screening will be required.

For projects that are on previously undisturbed sites or where the depth/extent of prior ground disturbance cannot be documented, or where the planned project-related ground disturbance will extend beyond the depth/extent of prior ground disturbance, additional screening will be carried out as detailed below and shown on the attached flow chart titled "SFPUC Standard Construction Measure #9 Archeological Assessment Process". The additional screening will be conducted by the SFPUC's qualified archeologist (defined as meeting the Secretary of the Interior's Professional Qualifications Standards [36 CFR 61]) and, if a consultant, selected in consultation with the San Francisco Planning Department's Environmental Review Officer (ERO) and meeting criteria or specialization required for the resource type as identified by the ERO.

1) The SFPUC qualified archeologist will conduct an archival review for the project site, including review of Environmental Planning's (EP's) archeological GIS data and/or a records search of the California Historical Resources Information System (CHRIS) and other archival sources as appropriate. The qualified archeologist will also conduct an archeological field survey of the project site if, in the archeologist's judgment, this is warranted by site conditions. Based on the results, the archeologist will complete and submit to EP a Preliminary Archeological Checklist (PAC) (version dated 4/2015, to be amended in consultation with the ERO as needed). The PAC will include recommendations for the need for archeological testing, additional research and/or treatment measures consistent with Archeological Measures I, II, and III, to be implemented by the project to protect and/or treat significant archeological resources identified as being present within the site and potentially affected by the project.

2) The EP Archeologist (for projects within the City) or the ERO's archeological designee (for projects outside the City) will then conduct a Preliminary Archeological Review (PAR) of the PAC and other sources as warranted; concur with the PAC recommendations; and/or amend the PAC in consultation with the SFPUC archeologist or archeological consultant to require additional research, reports, or treatment measures as warranted based on his/her professional opinion.

3) The SFPUC shall implement the PAC/PAR recommendations prior to and/or during project construction consistent with Standard Archeological Measures I, II, and III, and

shall consult with the EP Archeologist in selecting an archeological consultant, as needed, to implement these measures.

4) Ground disturbing activities in archeologically sensitive areas, as identified through the above screening, will not begin until required preconstruction archeological measures of the PAC/PAR (e.g., preparation of an Archeological Monitoring Plan, Archeological Treatment Plan, and/or an Archeological Research Design and Data Recovery Plan) have been implemented.

Historic (Built Environment) Resources. For projects within the City that include activities with the potential for direct or indirect effects to historic buildings or structures, initial CEQA screening will include a review, for the project footprint and up to one parcel surrounding the footprint of CCSF's online planning map, all relevant survey data, preservation address files, and other pertinent sources for previously-identified, historically significant buildings and building and structures more than 45 years old that have not been previously evaluated. For projects outside of the City, initial CEQA screening will include a records search of EP's CCSF historical resources data, CHRIS, and other pertinent sources for historically significant or potentially significant buildings and structures older than 45 years.

For projects that would modify an existing building or structure that has been determined by EP as being a significant historical resource (i.e., appears eligible to qualify for the CRHR), or that would introduce new aboveground facilities in the vicinity of a significant historical resource, or that would affect previously unevaluated buildings or structures more than 45 years old, the SFPUC will retain a qualified architectural historian (defined as meeting the Secretary of the Interior's Professional Qualification standards and, if a consultant, also selected in consultation with the ERO) to conduct a historical resource evaluation (HRE). SFPUC will submit the project description and the HRE to the CCSF Planning Department Preservation Planner or to the ERO's-designated qualified architectural historian to assess potential effects. Where the potential for the project to have adverse effects on historic buildings or structures is identified, the CCSF Planning Department Preservation Planner or the ERO's designee will consult with SFPUC to determine if the project can be conducted as planned or if the project design can be revised to avoid the significant impact, and will comply with applicable procedures set forth in Historic Architectural Resource Measure I. If these options are not feasible, the project will need to undergo further review with EP and mitigation may be required. If so, the project would not qualify for a Categorical Exemption from CEQA review.

Where construction will take place in proximity to a building or structure identified as a significant historical resource but would not otherwise directly affect it, the SFPUC will implement protective measures, such as but not limited to, the erection of temporary construction barriers to ensure that inadvertent impacts to such buildings or structures are avoided.

CULTURAL RESOURCES ATTACHMENTS

Flow Chart: SFPUC Standard Construction Measure #9 Archeological Assessment Process

SFPUC Archeological Measure I (Archeological Discovery)

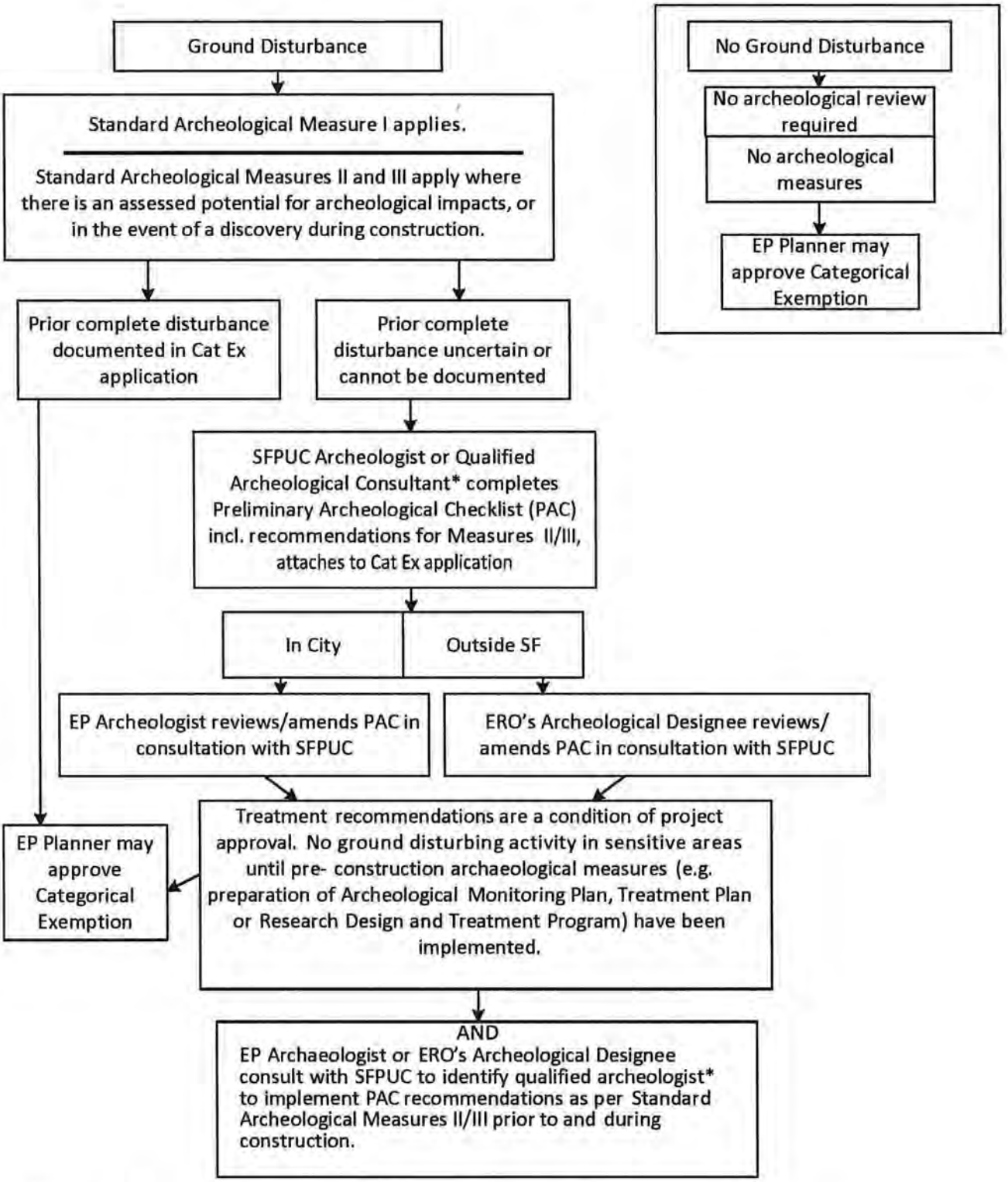
SFPUC Archeological Measure II (Archeological Monitoring)

SFPUC Archeological Measure III (Archeological Testing/Data Recovery)

Historic Architectural Resource Measure

SFPUC Preliminary Archeological Checklist (PAC)

Flow Chart: SFPUC Standard Construction Measure #9 Archeological Assessment Process



* Archeologist or archeological consultant who meets the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61) as defined in Standard Archeological Measure I.

SAN FRANCISCO
PLANNING DEPARTMENT

5/28/2015. Subject to revision

SFPUC ARCHEOLOGICAL MEASURE I (Archeological Discovery)

The following requirements are applicable to:

- All projects that will include soil (ground) disturbance, and
- Any discovery of a potential historical resource or of human remains, with or without an archeological monitor present.

Prior to ground disturbing activities:

A. **Alert Sheet**. The SFPUC shall, prior to any soils disturbing activities, distribute the Planning Department archeological resource "ALERT" sheet to each project contractor or vendor involved in project-related soils disturbing activities; ensure that each contractor circulates it to all field personnel; and provide the Environmental Review Officer (ERO) with a signed affidavit from each contractor confirming distribution to all field personnel.

Upon making a discovery:

B. **Work Suspension.** Should a potential archeological resource be encountered during project soils disturbing activity, with or without an archeological monitor present, the project Head Foreman shall immediately suspend soils disturbing activities within 50 feet (15 meters) of the discovery, protect the find from further disturbance, and notify the SFPUC Project Manager (PM) and/or Environmental Project Manager (EPM), who shall immediately notify the ERO for further consultation.

C. **Qualified Archeologist.** All archeological work conducted under this measure shall be performed by an archeologist who meets the Secretary of the Interior's Professional Qualifications Standards (36-CFR 61); consultants will be selected in consultation with the ERO and meeting the criteria or specialization required for the resource type as identified by the ERO in a manner consistent with SFPUC's on-call contracting requirements.

D. **Assessment and Additional Measures.** If the ERO determines that the discovery is a potential archeological/historical resource, the archeologist, in consultation with the ERO, shall document the find, evaluate based on available information whether it qualifies as a significant historical resource under the CEQA criteria, and provide recommendations for additional treatment as warranted. The ERO will consult with SFPUC and the qualified archeologist on these recommendations and may require implementation of additional measures as set forth below in Archeological Measures II and III, such as preparation and implementation of an Archeological Monitoring Plan, an Archeological Testing Plan, and/or an Archeological Data Recovery Plan, and including associated research designs, descendant group consultation, other reporting, curation, and public interpretation of results.

E. **Report Reviews**. All plans and reports prepared by an archeological consultant, as specified herein, shall be submitted first and directly to the ERO for review and comment with a copy to the SFPUC and shall be considered draft reports subject to revision until final approval by the ERO.

F. **Draft and Final Archeological Resources Reports.** For projects in which a significant archeological resource is encountered and treated during project implementation (see Archeological Measures II and III), the archeological consultant

shall submit a draft Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/monitoring/data recovery program(s) undertaken, research questions addressed, and research results. Information that may put at risk any archeological resource shall be provided in a separate, removable insert within the draft final report.

Once approved by the ERO, copies of the FARR shall be distributed as follows: two copies to the applicable California Historic Information System Information Center (CHRIS), one copy to each descendant group involved in the project, and documentation to the San Francisco Planning Department of transmittal of the above copies. In addition, the Planning Department shall be provided one bound, one unbound and one unlocked, searchable PDF copy on CD of the FARR, which shall include copies of any formal site recordation forms (CA DPR 523 series) and/or National Register of Historic Places/California Register of Historical Resources nominations.

G. **Other Reports.** In instances of high public interest or interpretive value, the ERO may require different or additional final report content, format, and distribution than that presented above.

H. **Human Remains, Associated or Unassociated Funerary Objects.** SFPUC shall ensure that human remains and associated or unassociated funerary objects discovered during any soils disturbing activity are treated in compliance with applicable State and federal laws. In the event of the discovery of potential human remains, the construction contractor shall ensure that construction activity within 50 feet of the find is halted and the SFPUC PM, EPM, ERO, and the County Coroner are notified immediately. If the Coroner determines that the remains are of Native American origin, he/she will notify the California State Native American Heritage Commission. Subsequent consultation on and treatment of the remains will be conducted consistent with Public Resources Code Section 5097.98 and CEQA Guidelines Section 15064.5(d), in consultation with the ERO.

I. **Consultation with Descendant Communities.** Consistent with AB 52 requirements, if requested, the SFPUC shall provide opportunities for Native American descendant groups to provide input during project planning for projects that may affect potential Tribal Cultural Resources. In addition, on discovery during construction of an archeological site associated with descendant Native Americans, the Overseas Chinese, or other descendant group, an appropriate representative of the descendant group shall be contacted by SFPUC at the direction of the ERO. SFPUC will offer this representative the opportunity to monitor archeological field investigations of the site and to consult with the ERO regarding the appropriate treatment and, if applicable, interpretation of the site and the recovered materials.

J. **Construction Delays**. Archeological monitoring and/or data recovery programs required by this measure may suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if this is the only feasible means to reduce potential effects on a significant archeological find to a less-than-significant level.

SFPUC ARCHEOLOGICAL MEASURE II (Archeological Monitoring)

A. **Archeological Monitoring Plan (AMP).** Where an archeological field investigation to identify expected buried or submerged resources cannot reasonably be carried out during project planning/ environmental review (for example, where definitive determination would require extensive street opening prior to construction), prior to any project-related soils-disturbing activities the qualified archeologist identified under Archeological Measure I.C. will consult with SFPUC and the ERO to develop an Archeological Monitoring Plan (AMP). The AMP which will be implemented in conjunction with soil-disturbing activities during construction. Preparation and implementation of an AMP also may be required based on the results of pre-construction archeological testing or upon a discovery during construction.

   The AMP shall include the following elements, at minimum:

   - Historical context and research design for assessment of resource types likely to be encountered;
   - Project activities to be archeologically monitored and intensity of monitoring of each type and location of project construction activity; and
   - Procedures for the documentation, significance and integrity assessment, treatment, interpretation and reporting of the types of resources likely to be encountered.

B. **Reporting.** Whether or not significant archeological resources are encountered, the archeological consultant shall submit a written report of the findings of the monitoring program to the ERO at the end of construction (See Archeological Measure I.E [Report Reviews] and I.F. [Final Archeological Research Report]).

C. **Monitoring Authorities**

   - The archeological monitor will have the authority to halt construction activity at the location of a suspected resource for inspection, documentation, and assessment of the need for further measures as set forth in Archeological Measure III.
   - The Archeological Monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis.
   - The Archeological Monitor(s) shall be present on the project site according to a schedule identified in the AMP, subject to modification upon ERO concurrence, based on findings.

D. **Testing/Data Recovery.** In the event of a discovery during construction, if the ERO and archeological consultant determine that the discovery is a significant resource (that is, a resource that meets the eligibility criteria of the California Register of Historic Resources or qualifies as a unique archeological resource) that will be adversely affected (that is, where the project would result in loss of data potential) or that additional investigation is required to make this determination, all applicable elements of Archeological Measure III (Archeological Testing/Data Recovery) also will be implemented.

SFPUC ARCHEOLOGICAL MEASURE III (Testing / Data Recovery)

The following provisions apply prior to or during construction when a significant archaeological resource (as defined in Measure II.D) or an archeological resource of undetermined significance is expected to be present in the work area and the ERO, in consultation with the qualified archeologist, determines that an archeological field investigation is needed to determine: a) the presence of an archeological resource, b) whether it retains depositional integrity, and c) whether it qualifies as a legally significant resource under CEQA criteria. All archeological work under this Measure will be carried out by a qualified archeologist as identified in Archeological Measure I.C. Per Archeological Measure I.J, implementation of this measure shall not exceed four weeks except at the direction of the ERO and only if this is the only feasible means to reduce potential effects on a significant archeological find to a less-than-significant level.

A. **Archeological Testing Program.** If an archeological investigation is required in order to verify resource location and/ or assess the significance of the resource, the archeological consultant shall consult with the ERO to prepare and implement an Archeological Testing Plan (ATP) that identifies:

   - Key research questions and associated data needs,
   - Testing/ sampling methods, and
   - Testing locations.

   Results of testing shall be presented to ERO in a written report following Measure I.E. If, based on the archeological testing program, the archeological consultant finds and the ERO concurs that significant archeological resources may be present, Measures III.B and/or III.C below will be implemented.

B. **Treatment.** If the project could adversely affect a significant (CRHR-eligible) archeological resource, preservation in place is the preferred manner of mitigating impacts, as detailed in CEQA Guidelines 15126.6(b) (3)(a) and (b).

   If preservation in place is determined to be infeasible, the SFPUC at its discretion shall either:

   - Re-design the proposed project so as to reduce the adverse effect to a less- than-significant level through preservation in place or other feasible measures; and/or
   - For a resource important for its association with an important event or person, or which is of demonstrable public interest for both its scientific and historical values (e.g., a submerged ship), and where feasible, preserve the resource in place with appropriate documentation; or, if not feasible to preserve in place, systematically document and/or recover for interpretive use, at the discretion of the ERO, and/or;

   For an archeological resource significant primarily for its data potential, design and implement an archeological data recovery program, as detailed under Measure III.D, below.

C. **Archeological Data Recovery Plan (ADRP).** For resources for which the elected treatment is archeological data recovery, the archeological consultant, in consultation with the ERO, shall prepare and implement an ADRP. It will identify how the significant information the archeological resource is expected to contain will be recovered and

preserved. Data recovery results will be reported in the FARR, as detailed in Measure I.F. The ADRP shall include the following elements:

- Historic context and research design
- Field methods and procedures, including sampling strategy
- Archeological monitoring recommendations for ongoing construction
- Cataloguing and laboratory analysis
- Discard, deaccession, and curation policy
- Interpretive program
- Security measures

HISTORIC ARCHITECTURAL RESOURCE MEASURE

A. **Qualified Architectural Historian.** When a building or structure that has been determined to be an historical resource is identified within a project's area of potential effects, the SFPUC will retain a qualified architectural historian (defined as meeting the Secretary of the Interior's Professional Qualification standards and, if a consultant, selected in consultation with the ERO) to conduct a historical resource evaluation (HRE).

B. **Effects Assessment**. The SFPUC will submit the project description and the HRE to CCSF Planning Department Preservation Planner or to the ERO's-designated qualified architectural historian to assess potential effects. If a potential for the project to have adverse effects on historic buildings or structures is identified, the CCSF Planning Department Preservation Planner or the ERO's architectural historian designee will consult with SFPUC to determine if the project can be implemented as planned or if the project design can be revised to avoid the significant impact. If these options are not feasible, the project will need to undergo further review with EP and mitigation may be required. If so, the project may not qualify for a Categorical Exemption from CEQA review.

C. **Potential Vibration Effects.**

1. Where construction takes place in proximity to a building or structure identified as a significant historical resource but would not otherwise directly affect it, the SFPUC will implement protective measures, such as, but not limited to, the erection of temporary construction barriers to ensure that inadvertent impacts to such structures are avoided.

2. For projects that will use vibratory equipment generating vibration in excess of 0.2 inches per second, peak particle velocity adjacent to historic buildings susceptible to vibration, the SFPUC will engage a qualified historic architect or historic preservation professional to document and photograph the pre-construction condition of the building and prepare a plan for monitoring the building during construction. The monitoring plan will be submitted to and approved by CCSF Planning Department Preservation Planner or the ERO's architectural historian designee prior to the beginning of construction and will be implemented during construction. The monitoring plan will identify how often monitoring will occur, who will undertake the monitoring, reporting requirements on vibration levels, reporting requirements on damage to adjacent historical resources during construction, reporting procedures to follow if such damage occurs, and the scope of the preconstruction survey and post-construction conditions assessment.

3. If any damage to a historic building or structure occurs, the SFPUC will modify activities to minimize further vibration.
4. If any damage occurs, the building will be repaired following the Secretary of the Interior's Standards for the Treatment of Historic Properties under the guidance of a qualified historic architect or historic preservation professional.

D. **Minor Alteration of Historic Buildings or Structures.**

1. If a project involves minor alterations and/or rehabilitation to a building that qualifies as an historical resource, the proposed design will be reviewed by a qualified historic preservation professional in consultation with the CCSF Planning Department Preservation Staff or the ERO's architectural historian, who shall identify modifications to project design, as needed, to avoid or minimize effects to the historic integrity of the historical resource. The assessment also will provide direction on ensuring compliance with Secretary of the Interior's Standards and Guidelines.
2. To qualify for a Categorical Exemption, the project must be modified as identified in the HRE and all work must be conducted in compliance with Secretary of the Interior's Standards under the guidance of an architectural historian such that historical integrity of the building or structure would not be compromised.

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San Francisco Public Utilities Commission Preliminary Archeological Checklist (PAC)

A. PROJECT INFORMATION:

Date: _____ **SFPUC Archeological Reviewer:** _____

Project name: _____ **Case No:** _____

Application type: ☐ EE ☐ CatEx

☐ In City ☐ Outside of City

Project address: _____

APN/Cross streets: _____ OR **City/ County:** _____

EP Planner: _____ **EP Archeological Reviewer designee:** _____

Consultant Archeologist name/firm (if applicable): _____

1. PROJECT DESCRIPTION: (include description of construction methods, all potentially ground-disturbing activities including parking, staging, equipment and spoils storage, temporary and permanent work areas, utility lines)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

2. POTENTIAL GROUND DISTURBANCE

Yes	No	Project Component
☐	☐	Excavation (basement, elevator, utilities, seismic retrofit, remediation, underground vaults, septic tank system, culverts, etc.) Maximum depth: _____

2. POTENTIAL GROUND DISTURBANCE (cont.)

Yes	No	Project Component
☐	☐	Pipeline replacement or installation (specify cut and cover, directional drilling, pipe bursting, etc):
☐	☐	Tunnels, transport storage boxes
☐	☐	Bore pits, test pits
☐	☐	Shallow Building Foundation (Mat, Spread Footings, etc.) Depth:
☐	☐	Piles, piers, micropiles, pilings, piling replacement
☐	☐	Grading, scraping
☐	☐	Demolition
☐	☐	Construction staging, spoils on unpaved area, fill
☐	☐	Road construction
☐	☐	Geotechnical trenching (dimensions)_____
☐	☐	New rip rap
☐	☐	Wharf or seawall modification
☐	☐	Other (specify):

Anticipated maximum extent of project ground disturbance:
Vertical_____Horizontal_____

APE Map Attached: Y N

3. PREVIOUS SOILS DISTURBANCE AT PROJECT SITE:
Has the project site been previously disturbed by any of the following?

Yes	No	**Component of disturbance**
☐	☐	Existing Basement Depth:_____ Area:_____
☐	☐	Existing Foundation (footings, perimeter, piles, micropiles, etc.) Depth:
☐	☐	Site remediation/UST installation or removal, other excavation. Depth:
☐	☐	Site Grading
☐	☐	Demolition
☐	☐	Dredging
☐	☐	Piling installation (width and depth of trench):_____
☐	☐	Riprap
☐	☐	Seawall construction
☐	☐	Other (specify):

4. Has the entire project area previously been disturbed to the maximum depth and extent of proposed project disturbance? Y N
(Attach documentary evidence such as plans and profiles of prior trenching, utility street occupancy, historic photos, specifications from prior projects, etc.)
List attachments provided:_____
_____

☐ **Complete prior disturbance adequately documented; stop here, no further archeological assessment is required.** Assessed by: _____

☐ **Prior ground disturbance is unknown or cannot be adequately documented; continue to B.**

SFPUC Preliminary Archeological Checklist

B. ARCHIVAL AND ARCHEOLOGICAL DATA ASSESSMENT

1. ARCHIVAL AND DATA REVIEW

Dates of review:_____

Resources reviewed:

- ☐ Maher zone maps. Dates/ origin/ depth of fill if known_____
- ☐ Geotechnical data for project site and vicinity (Cite report_____)
- ☐ EP Archeological GIS maps (all layers or specify applicable layers)_____

_____

- ☐ Sanborn Insurance maps (1887-93, 1899-1900)
- ☐ U.S. Coast Survey maps (1853, 1857, 1869)
- ☐ Information Center archeological records search (attach request and response)
- ☐ USFS/ BLM/ NPS archeological files (upcountry projects)
- ☐ NAHC Sacred Lands File
- ☐ Native American/ Ethnic group consultation
- ☐ Other:

Findings:

- ☐ No previously documented resources present
- ☐ Archival research suggests resources are or may be present within or immediately adjacent to the project area where soils disturbance will occur

2. ARCHEOLOGICAL FIELD INVENTORY

- ☐ Not warranted; no exposed ground surface in project area
- ☐ Results negative
- ☐ Results positive
- ☐ Survey results inconclusive

Archeologist/ Firm_____ Date of Survey_____

Attach Archeological Survey Report/Memo; may combine with results of archival review.

3. SUMMARY OF RESULTS OF PROJECT ASSESSMENT

Site History/Formation:

_____

_____

_____

_____

_____

_____

Recorded/documented archeological sites/ investigations on/in the vicinity of the project site:

_____

_____

_____

C. SFPUC CONCLUSIONS AND RECOMMENDATIONS

1. NO EFFECTS TO ARCHEOLOGICAL RESOURCES EXPECTED:

- ☐ Project effects limited to previously-disturbed soils.
- ☐ Project effects limited to culturally sterile soils.
- ☐ Based on assessment under B, above, no potentially CEQA-significant archeological

resources are expected within project area affected soils.

2. AVOIDANCE AND TREATMENT MEASURES NECESSARY TO AVOID AN ADVERSE EFFECT TO SIGNIFICANT ARCHEOLOGICAL RESOURCES:

☐ Archeological Measure I, Discovery: low potential to adversely affect archeological resources; may be avoided by implementation of SFPUC Standard Archeological Measure I (Discovery during Construction), with implementation of Standard Archeological Measures II (Monitoring) and/or III (Testing/Data Recovery) in the event of a discovery during construction.

☐ Archeological Measure II, Monitoring: some potential for the project to adversely affect archeological resources; may be avoided by implementation of SFPUC Standard Archeological Measure II (Archeological Monitoring) during construction.

☐ Archaeological Measure III, Testing/Data Recovery: potential for the project to adversely affect archeological resources; may be avoided by implementation of SFPUC Standard Archeological Measure III (Archeological Testing/Data Recovery)

Implementation Required:

☐ prior to or ☐ during construction

☐ CEQA evaluation of the project requires preparation and implementation of an archeological research design and treatment plan (ARDTP) by a qualified archeological consultant. See attached scope of work for the ARDTP.

D. EP ARCHEOLOGIST/ ERO-ARCHEOLOGICAL DESIGNEE REVIEW

☐ I concur with the conclusions and recommendations provided in Section C, above.

☐ Additional/ alternative measures recommended (detail):

_____

_____

_____

_____

_____

_____

_____

☐ Meeting requested

APPENDIX B

Special-Status Wildlife Species Table

The species in this table were compiled from a CNDDB query of 9 USGS 7.5-minute quadrangles centered around the project area. Special-status species that were listed but that have no potential to occur in the project area due to lack of suitable habitat are not included in the table below.

Common Name *Scientific Name*	Status Federal/State/CDFW	Habitat Association	Likelihood to Occur in the Project Area
Birds			
Alameda song sparrow *Melospiza melodia pusillula*	--/--/SSC	Occurs in tidal salt marshes on the fringes of south San Francisco Bay that have an appropriate configuration of vegetation, water, and exposed ground. Requires some amount of vegetation, including cord grass, pickleweed, or gumplant, as well as bare ground.	**Low.** No suitable habitat is present in the project area. Suitable habitat exists in the project vicinity.
American peregrine falcon *Falco peregrinus anatum*	DL/DL/FP	Range includes most of California during migrations and in winter. Typically nests on ledges of large cliff faces. Many pairs are nesting on city buildings and bridges, and some pairs nest in tree cavities of coastal redwoods. Nesting and wintering habitats are varied, including wetlands, woodlands, other forested habitats, cities, agricultural areas and coastal habitats.	**Low.** No suitable habitat is present in the project area. Potential suitable habitat exists in the project vicinity.
Black Skimmer *Rynchops niger*	--/--/SSC	Breeds on the coast from San Francisco Bay south to south San Diego Bay and in the interior at the Salton Sea. Requires large areas of bare earth sufficiently isolated from terrestrial predators or other disturbances for ground nesting. Forage for small fish and possibly crustaceans by skimming the water surface in the calm shallows of harbors, lagoons, bays, estuaries, ponds, and river channels.	**Low.** No suitable roosting habitat exists in the project area. Potential low-quality foraging habitat is present in Islais Creek.
Bryant's savannah sparrow *Passerculus sandwichensis alaudinus*	--/--/SSC	A California endemic restricted to a narrow coastal strip from Humboldt Bay south to the Morro Bay. Occupies low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands. Bay-shore habitats are composed primarily of broad expanses of higher parts of Pickleweed marsh 5-10 ft above mean sea level, above cord grass stands, and where the Pickleweed community merges into grassland.	**Low.** No suitable habitat is present in the project area. Low potential to forage in the project vicinity.
California brown pelican	DL/DL/FP	Found in estuarine, marine subtidal, and marine pelagic waters along the California coast. Usually rests on water or	**Low.** Potential low-quality habitat is present in the project vicinity.

Common Name *Scientific Name*	Status Federal/State/CDFW	Habitat Association	Likelihood to Occur in the Project Area
Pelecanus occidentalis californicus		inaccessible rocks (either offshore or on mainland), but also uses mudflats, sandy beaches, wharfs, and jetties.	
California least tern *Sternula antilarum browni*	FE/SE/FP	Found along the Pacific Coast of California, from San Francisco to Baja California. Nest on open beaches kept free of vegetation by the tide. Feeds primarily in shallow estuaries or lagoons where small fish are abundant, by diving for fish near the surface.	**Low.** No suitable roosting habitat exists in the project area. Potential low-quality foraging habitat is present in Islais Creek.
Fish			
Chinook salmon (*Oncorhynchus tshawytscha*) three distinct Evolutionary Significant Units (ESU) or races: winter-run, spring-run, and fall/late fall-run	FE/SE/SSC	Occur across northern California coasts and freshwater streams. Migrate, or "run," from the ocean to fresh water to spawn, and by the drainage in which the spawning occurs and juvenile downstream migration. While all three chinook salmon races are found in San Francisco Bay, the Central Valley fall/late fall-run are the only race that spawns in San Francisco Bay tributary streams.	**Low.** Central Valley fall/late fall-run individuals have rarely been documented within the project area or the immediate vicinity. Any occurrence would only be temporary as the surrounding channel and adjacent bay habitat is primarily utilized only for migratory purposes.
green sturgeon (*Acipenser medirostris*) Population: Southern DPS	FT/--/--	Occur in coastal regions and freshwater bodies from northern Los Angeles County to the Oregon border. Green sturgeon spawning populations have been found in the Sacramento-San Joaquin system and medium-sized rivers northward. Adults probably enter the San Francisco Bay estuary and move up the Sacramento River in early spring. Critical Habitat has been designated for this species.	**Low**. Potential to be present in Islais Creek Channel year-round; however, their preferred migration routes suggest a low likelihood for presence.
longfin smelt *Spirinchus thaleichthys*	FC/ST/--	Pelagic, estuarine, anadromous fish found throughout San Francisco Bay. Uses a variety of habitats from nearshore waters, to estuaries and lower portions of freshwater streams. Juveniles are collected throughout the Bay during the late spring, summer and fall.	**Moderate.** Potential to be present in bay habitat adjacent to the site and in Islais Creek Channel at any time of the year.
Pacific herring (*Clupea pallasii*)	EFH and CDFW managed species	Schools of adult herring migrate inshore to bays and estuaries to spawn in intertidal and shallow subtidal zones. A forage species for many other marine mammals. Commercial Pacific herring fishery in the San Francisco Bay	**High.** Depending on time of year. December through February is when spawning occurs in the Bay.

Common Name *Scientific Name*	Status Federal/State/CDFW	Habitat Association	Likelihood to Occur in the Project Area
		is closely regulated by CDFW. Essential Fisheries Habitat has been designated for this species.	Construction activities in water will be restricted to outside of spawning season.
steelhead (central California coast DPS) *Oncorhynchus mykiss irideus* (pop. 8)	FT/--/--	Anadromous fish that spends several years in the ocean, returning to freshwater rivers to migrate upstream to spawn and rear young. Streambed spawning areas require dense riparian canopy, cool oxygenated water, and coarse gravels. Rearing young requires deeper pools of streams for several years before migrating to the ocean. Occurs in coastal streams including drainages of San Francisco.	**Low.** Variable depending on season.
Reptiles			
green sea turtle *Chelonia mydas*	FT/--/--	Rare sightings have occurred as far north as southern Alaska, but most commonly occur from San Diego south. Occur in nearshore pelagic habitats, as well as in bays and lagoons. Particular to areas with seagrass beds.	**Rare**. Rare sightings have occurred in San Francisco Bay. Generally associated with the warmer waters of Southern California and Mexico.
Terrestrial Mammals			
Townsend's big-eared bat *Corynorhinus townsendii*	--/--/SSC	This species is found in all but subalpine and alpine habitats, and may be found at any season throughout its range. It is most abundant in mesic habitats. Requires caves, mines, tunnels, buildings, or other human-made structures for roosting. Small moths are the principal food.	**Low.** No suitable roosting habitat is present in the project area. Potential low-quality foraging habitat is present.
Marine Mammals			
California sea lion (*Zalophus californianus*)	MMPA	Lives in shallow coastal waters and hauls out on beaches, docks, buoys, and jetties. Observed in San Francisco Bay occupying Angel Island and the docks near Pier 39.	**Moderate to High.** Occur year-round in San Francisco Bay and have potential to traverse or forage within project site.
common bottlenose dolphin (*Tursiops truncatus*)	MMPA	Found throughout the world in both offshore and coastal waters, including harbors, bays, gulfs, and estuaries of temperate and tropical waters. Feed on a variety of prey such as fish, squid and crustaceans.	**Low.** Common in the vicinity of the Golden Gate and Richardson's Bay. Rare elsewhere.
Gray whale (*Eschrichtius robustus*)	FDR, MMPA	Inhabits shallow coastal waters in the North Pacific Ocean. Consumes a wide range of benthic invertebrates. Occasionally gray whales enter the San Francisco Bay to feed and/or rest during migration.	**None-Rare.** December to April, during migration from Alaska to Baja California, occasionally enter Bay-Delta, transient

Common Name *Scientific Name*	Status Federal/State/CDFW	Habitat Association	Likelihood to Occur in the Project Area
Population: Eastern North Pacific DPS			occurrences in the San Francisco Bay uncommon.
Guadalupe fur seal (*Arctocephalus townsendi*)	FT, ST, MMPA	During breeding season, prefers coastal rocky habitats and caves in the tropical waters of the southern California/Mexico region.	**None-Rare.** Stranding may occur in San Francisco Bay during El Niño years.
harbor porpoise (*Phocoena phocoena*) Population: San Francisco-Russian River Stock	MMPA	Commonly found in bays, estuaries, harbors and fjords less than 650 feet deep. Most seasonal movements may be influenced by prey availability. Mainly eat schooling fish, occasionally squid and octopus.	**Low**. Common in the vicinity of the Golden Gate and Richardson's Bay. Rare elsewhere.
Pacific harbor seal (*Phoca vitulina richardii*) Population: California Stock	MMPA	Inhabits near-shore coastal and estuarine areas. Opportunistic feeders on abundant prey species like small schooling fish. The only species of marine mammal that breed and bear young in San Francisco Bay. Harbor seals are present in the bay year-round and use it for foraging, resting, and reproduction.	**Moderate to High.** Occur year-round in San Francisco Bay and have potential to traverse or forage within project site.
humpback whale (*Megaptera novaeangliae*) Population: Central America DPS	FE, MMPA	Lives in oceans around the world: when calving, prefers shallow, warm waters like shores. Prefer cold, productive waters to filter-feed on small crustaceans and small fish. Humpback whales generally do not inhabit San Francisco Bay, except for rare occurrences.	**Rare.** Rare to occasional, in the vicinity of the Golden Gate. Most recently observed in San Francisco Bay in June 2019.
northern elephant seal (*Mirounga angustirostris*)	MMPA	Prefers open ocean for most of the year while feeding. Prefers sandy beaches while on land for molting and breeding, especially offshore islands.	**Rare**. Rare sightings have been reported within San Francisco Bay
northern fur seal (*Callorhinus ursinus*) Population: California Stock	MMPA	Spends most of the year in open ocean for feeding and prefers rocky beaches on islands for resting and breeding. Closest occurrence is a small population at the Farallon Islands.	**None-Rare**. Rare strandings may occur in San Francisco Bay during El Niño years.

Notes:

Federal
FE: Endangered under Federal Endangered Species Act (ESA)
FT: Threatened under Federal ESA
FC: Eligible for endangered or threatened listing status under Federal ESA
DL: Delisted
MMPA: Protected under Marine Mammal Protection Act

State
SE: Endangered under California ESA
ST: Threatened under California ESA
CT: Candidate for list threatened listing status under California ESA
DL: Delisted

California Department of Fish and Wildlife (CDFW)
FP: Fully Protected Species
SSC: Species of Special Concern
WL: Watch list

Sources:

California Department of Fish and Wildlife. California Wildlife Habitat Relationships Life History Accounts & Range Maps. Retrieved March 6, 2019, from https://map.dfg.ca.gov/imaps/cwhr/cwhrlife. 1997-2008.

California Department of Fish and Wildlife. Conservation and Management of Wildlife and Habitat; Species Management. Retrieved March 6, 2019, from https://www.wildlife.ca.gov/Conservation. 2018.

NOAA Fisheries. Species Directory. Retrieved from https://www.fisheries.noaa.gov/species-directory. 2017.

US Fish and Wildlife Service. Sacramento Fish & Wildlife Office Endangered Species Information. Retrieved March 6, 2019, from https://www.fws.gov/sacramento/es_species/Accounts/. September 7, 2018.

APPENDIX C

Special-Status Plant Species Table

The species in this table were compiled from CNDDB and California Native Plant Society queries of 9 USGS 7.5-minute quadrangles centered around the project area. Special-status species that were listed but that have no potential to occur in the project area due to lack of suitable habitat are not included in the table below.

Common Name **Scientific Name**	**Status**[i] **Federal/State/CRPR**	**Blooming Period**	**Elevation Range (ft)**	**Suitable Habitat Type**	**Likelihood of Occurrence in the Project Area**
California seablite *Suaeda californica*	FE/--/1B.1	Jul-Oct	0 - 50	Coastal salt marshes and swamps	**Absent.** The bands of tidal wetland along the Islais Creek bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	--/--/1B.2	(Apr)Jun-Oct	0 - 100	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsides)	**Absent.** The bands of tidal wetland along the Islais Creek bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.
coastal triquetrella *Triquetrella californica*	--/--/1B.2	N/A (non-flowering)	30 - 330	Grows in shaded soil, rocks, sand, or gravel in dry or moist conditions within 10 miles of the coast. Known to occur in areas of light to moderate disturbance including trails and picnic areas. Associated with coastal scrub.	**Absent.** Tulare and Islais Creek park are too highly disturbed to support the species. No other potentially suitable habitat is present in the project area.
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	--/--/1B.2	Apr-Nov	65 - 1835	Valley and foothill grasslands, marsh edges, and sometimes roadsides	**Absent.** Tulare and Islais Creek park are too highly disturbed to support the species. No other potentially suitable habitat is present in the project area.

Common Name Scientific Name	Status[i] Federal/State/CRPR	Blooming Period	Elevation Range (ft)	Suitable Habitat Type	Likelihood of Occurrence in the Project Area
Diablo helianthella *Helianthella castanea*	--/--/1B.2	Mar-Jun	195 – 4,265	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland Usually rocky, axonal soils. Often in partial shade	**Absent.** Tulare and Islais Creek park are too highly disturbed to support the species. No other potentially suitable habitat is present in the project area.
hairless popcornflower *Plagiobothrys glaber*	--/--/1A	Mar-May	45 - 590	Meadows and seeps (alkaline), Marshes and swamps (coastal salt)	**Absent.** The bands of tidal wetland along the Islais Creek bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.
long-styled sand-spurrey *Spergularia macrotheca var. longistyla*	--/--/1B.2	Feb-May(Jun)	0 - 835	Meadows and seeps, Marshes and swamps Alkaline	**Absent.** The bands of tidal wetland along the Islais Creek bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.
marsh sandwort *Arenaria paludicola*	FE/SE/1B.1	May-Aug	5 - 560	Marshes and swamps (freshwater or brackish) sandy, openings	**Absent.** The bands of tidal wetland along the Islais Creek bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.
pappose tarplant	--/--/1B.2	May-Nov	0 – 1,380	Chaparral, Coastal prairie, Meadows and seeps, Marshes and	**Absent.** The bands of tidal wetland along the Islais Creek

Common Name Scientific Name	Status[i] Federal/State/CRPR	Blooming Period	Elevation Range (ft)	Suitable Habitat Type	Likelihood of Occurrence in the Project Area
Centromadia parryi ssp. parryi				swamps (coastal salt), Valley and foothill grassland (vernally mesic) often alkaline	bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	--/--/1B.2	Jun-Oct	0 - 35	Marshes and swamps (coastal salt)	**Absent.** The bands of tidal wetland along the Islais Creek bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.
saline clover *Trifolium hydrophilum*	--/--/1B.2	Apr-Jun	0 - 985	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools	**Absent.** The bands of tidal wetland along the Islais Creek bank are too small and fragmented to provide habitat for the species. Potential suitable habitat is present in the project vicinity at Pier 94 and Heron's Head Park.

[i] Status

Federal
FE: Endangered under Federal Endangered Species Act (ESA)
FT: Threatened under Federal ESA

State
SE: Endangered under California ESA
ST: Threatened under California ESA
CE: Candidate for endangered listing status under California ESA
SR: Rare under the Native Plant Protection Act

California Rare Plant Rank (CRPR)
1A: Plants presumed extinct in California
1B: Plants rare, threatened, or endangered in California and elsewhere
2A: Plants presumed extirpated in California but common elsewhere

2B: Plants rare, threatened, or endangered in California but more common elsewhere
0.1: Seriously threatened in California
0.2: Fairly threatened in California
0.3: Not very threatened in California

Sources:

Calflora. (2019). *The Calflora Database: Information on California plants for education, research and conservation*. Retrieved from https://www.calflora.org/

California Native Plant Society. (2019). *Inventory of Rare and Endangered Plants*. Retrieved from http://www.rareplants.cnps.org

CDFW. (2018). California Natural Diversity Database (CNDDB).

Jepson Flora Project. (2019). *Jepson eFlora:*. Retrieved from http://ucjeps.berkeley.edu/eflora/