San Leandro Water Pollution Control Plant Treatment Wetland and Shoreline Resilience Project

Initial Study/Mitigated Negative Declaration

Prepared for the City of San Leandro

February 2024

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INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
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TREATMENT WETLAND AND SHORELINE RESILIENCE PROJECT

This Initial Study/Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.), and the CEQA Guidelines found in Chapter 14 of the California Code of Regulations.

Project Summary

1. Project Title:	City of San Leandro Water Pollution Control Plant Treatment Wetland and Shoreline Resiliency Project
2. Lead Agency Name and Address:	City of San Leandro, 835 East 14th Street San Leandro, CA 94577
3. Contact Person and Phone Number:	Hayes Morehouse, Water Pollution Control Manager Phone: (510) 577-3437
4. Project Location:	City of San Leandro Water Pollution Control Plant 3000 Davis St, San Leandro, CA 94577
5. Project Sponsor's Name and Address:	Same as Lead Agency (No. 2, above)
6. General Plan Designation(s):	Public/Institutional[1]
7. Zoning:	Industrial General (IG)[2]
8. Description of Project:	See Chapter 2
9. Surrounding Land Uses and Setting:	The City's Water Pollution Control Plant (WPCP), situated at 3000 Davis Street, San Leandro, California, is encompassed by a mix of land uses. To the north is the Metropolitan Golf Links Golf Course and the Oakland Airport. Industrial and commercial land uses are to the east and south, including a waste transfer facility and shooting range. To the southeast is the Oyster Bay Regional Shoreline, which is a capped landfill operated as a public park by the East Bay Regional Parks District. The specific Project location is immediately west of the main facilities of the WPCP, which is zoned as Public and Semipublic (PS), according to the City's Planning Division,

[1] City of San Leandro. Official General Plan Land Use Map of the City of San Leandro, adopted by the City Council on December 7, 2020, under Resolution 2020-149. Available at www.sanleandro.org

[2] City of San Leandro. Zoning for the City of San Leandro, Effective 1/18/2023, Adopted by the City Council on 12/19/2022 under Ordinance 2022-022. Available at www.sanleandro.org/345/Zoning-Code-Zoning-Map

	reflecting its role in serving the community's wastewater treatment needs. Southwest of the WPCP is a channel connected to San Francisco Bay. The San Francisco Bay Trail runs along the western perimeter of the WPCP, which offers visual access to the Proposed Project site, linking the Project to the broader natural and recreational context of the Bay Area. The proximity of these diverse land uses underscores the plant's integral role in the region's industrial and ecological systems.
10. Other public agencies whose approval is required:	San Francisco Bay Conservation and Development Commission, San Francisco Regional Water Quality Control Board, California Department of Fish and Wildlife.
11. Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, has consultation begun?	While Native American tribes traditionally and culturally affiliated with the Project area have not requested consultation per Section 21080.3.1, tribes were consulted in 2018 and 2020. Letters will be issued to individuals affiliated with local tribes during the comment period for this Initial Study/Mitigated Negative Declaration.

1. INTRODUCTION

This draft Initial Study / Mitigated Negative Declaration (IS/MND) evaluates the potential environmental impacts of the City of San Leandro's Treatment Wetland and Resiliency Project (Proposed Project or Project) at the City's Water Pollution Control Plant (WPCP). The Project encompasses the transformation of existing facilities and the introduction of new equipment at the WPCP. A detailed project description is available in Chapter 2, *Project Description*. This document reflects the City of San Leandro's (City or San Leandro) independent judgment and analysis concerning the environmental impacts of the Proposed Project.

Under the California Environmental Quality Act (CEQA) Statutes and Guidelines, the environmental approval process includes a 30-day period for public and agency review of this IS/MND. Feedback received during this time will be evaluated and integrated as necessary into a final IS/MND. The City Council will consider all relevant information in a regularly scheduled meeting to determine the adequacy of this analysis. After this review, a Notice of Determination may be issued and filed with the Alameda County Recorder, which would allow the Project to proceed. All documents and materials related to this process are maintained by San Leandro.

The document is structured in accordance with CEQA Guidelines. Chapter 3, titled "Environmental Checklist," addresses twenty (20) specific areas, including Air Quality, Cultural Resources, Transportation, and Traffic, among others, which must be assessed. This IS/MND methodically examines each element of the Project for potential environmental impacts and outlines the anticipated effects. These impacts are classified into four categories: "Potentially Significant," "Less Than Significant with Mitigation Incorporation," "Less than Significant Impact," and "No Impact." Discussions in each section of the Environmental Checklist correlate anticipated impacts with CEQA issues and propose mitigation measures for any significant impacts identified. References within each section list the technical studies, agencies, and other resources consulted during the evaluation.

This IS/MND is prepared in compliance with Public Resources Code Section 21000 et seq., CEQA of 1970 (as amended), and Title 14, Chapter 3 of the California Administrative Code. In accordance with the CEQA Guidelines, California Code of Regulations Title 14, Chapter 3, Section 15070, a Mitigated Negative Declaration shall be prepared if the following criteria are met:

- There is no substantial evidence that the Project will have a significant effect; or
- Where there may be a potentially significant effect, revisions to the Project would avoid or mitigate the effects to a point where clearly no significant effects would occur.

In accordance with Section 15073 of the CEQA Guidelines, this document is being circulated to local, state and federal agencies and to interested organizations and individuals who may wish to review and comment on the report. Written comments may be forwarded to:

Hayes Morehouse, Water Pollution Control Manager
City of San Leandro Water Pollution Control Plant
3000 Davis St.
San Leandro, CA 94577

1.1. Report Organization

This report is organized as follows:

Chapter 2, **Project Description**, introduces the Proposed Project with background, needs and objectives, and discusses the proposed facilities.

Chapter 3, **Environmental Checklist**, presents the CEQA Initial Study Environmental Checklist, analyzes environmental impacts resulting from the Project and describes the mitigation measures that would be incorporated into the Project to avoid or reduce impacts to less-than-significant levels.

Chapter 4, **Mitigation Measures and Mitigation Monitoring and Reporting Program**, lists the mitigation measures recommended in Chapter 3 along with the monitoring and reporting procedures.

1.2. Agency Uses of this Document

The City of San Leandro, as the Lead Agency will use this IS/MND to evaluate environmental impacts of the Proposed Project and make a decision regarding adopting the IS/MND and approving the Proposed Project. Upon adoption of the IS/MND and the mitigation measures described herein, San Leandro will use this document to make written findings, consider Project approval, and file a Notice of Determination.

The analyses contained within this IS/MND would also be used to support the acquisition of regulatory permits or approvals, as needed. The anticipated permits or approvals that San Leandro may be required to apply for or obtain for the Proposed Project include, but may not be limited to:

- San Francisco Bay Regional Water Quality Control Board (RWQCB) waste discharge requirements[3]
- National Pollutant Discharge Elimination System (NPDES) Order No. WQ 2022-0057-DWQ NPDES No. CAS000002 (General Construction Permit)
- Amendment to an existing San Francisco Bay Conservation and Development Commission (BCDC) Permit, and consistency determination under the Coastal Zone Management Act
- California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement

[3] San Francisco Bay Regional Water Quality Control Board. 2022. City of San Leandro Water Pollution Control Plant – Treatment Wetland Waste Discharge Requirements, Order R2-2022-0006 NPDES Permit CA0038881. Effective February 9, 2022

2. PROJECT BACKGROUND AND DESCRIPTION

2.1. Project Purpose and Objectives

The Proposed Project involves converting a 6.9-acre wastewater storage basin into a multi-benefit freshwater treatment wetland. The primary purpose is to reduce the loading of wastewater-borne nitrogen, phosphorus, and other contaminants, such as pharmaceutical compounds, into San Francisco Bay. Closely aligned objectives include:

1) Enhance habitat along an accessible and visible stretch of the Bay Trail to improve wildlife resources through the creation of wet meadow habitat once abundant along the shores of San Francisco Bay, yet virtually non-existent today;
2) Create ecological and engineering-based educational opportunities within a densely urban and industrialized portion of San Francisco Bay;
3) Demonstrate the effectiveness of a novel and potentially cost-effective contaminant removal process, relying in part on lessons learned from the Oro Loma Sanitation District (OLSD) horizontal levee project; and
4) Repurpose an underutilized wastewater retention basin to enhance aesthetic qualities and improve operational capacity and flexibility within San Leandro's WPCP.

2.2. Project Background

In 2018, the San Francisco Bay Restoration Authority (SFBRA) awarded San Leandro a Measure AA grant to plan and design a water quality improvement, shoreline restoration, and resiliency project. This includes the conversion of an underutilized 6.9-acre wastewater storage basin adjacent to the WPCP into a multi-benefit treatment wetland to improve the operational capacity of the WPCP, anticipate future nutrient regulations, enhance habitat quality, and pilot a novel treatment wetland design.

This Project builds upon and relies on lessons learned from other California-based multi-benefit treatment wetlands, including the OLSD horizontal levee project and unit-process treatment wetlands at the Discovery Bay Wastewater Treatment Plant and Prado Wetlands in Riverside County. The latter two (2) projects utilized shallow, open-water wetlands to achieve high removal of nitrate and pharmaceutical compounds. The Project incorporates elements of open water shallow wetlands and horizontal levees to maximize nitrate removal and create freshwater wetland habitat once abundant along the shores of SF Bay, yet virtually non-existent today.

Existing Facilities

San Leandro owns and operates its WPCP, located at 3000 Davis Street, San Leandro, CA 94577 (Figures 2.1 and 2.2, *Regional Location* and *Project Location*). San Leandro's WPCP provides secondary wastewater treatment for about 15,300 domestic, commercial, and industrial service connections throughout the northern two-thirds of San Leandro, serving a population of about 60,000.

The WPCP has a design average daily dry weather design flow (ADWF) of 7.6 million gallons per day (mgd), though ADWF has averaged 4.8 mgd in recent years. San Leandro discharges secondary treated effluent through a common outfall to South SF Bay, which is managed and maintained by the East Bay Dischargers Authority (EBDA), a Joint Exercise of Power Agency with other East Bay wastewater agencies. Facilities discharging through EBDA's common outfall are regulated under NPDES Permit Order No. R2-2017-0016; CA0037869.

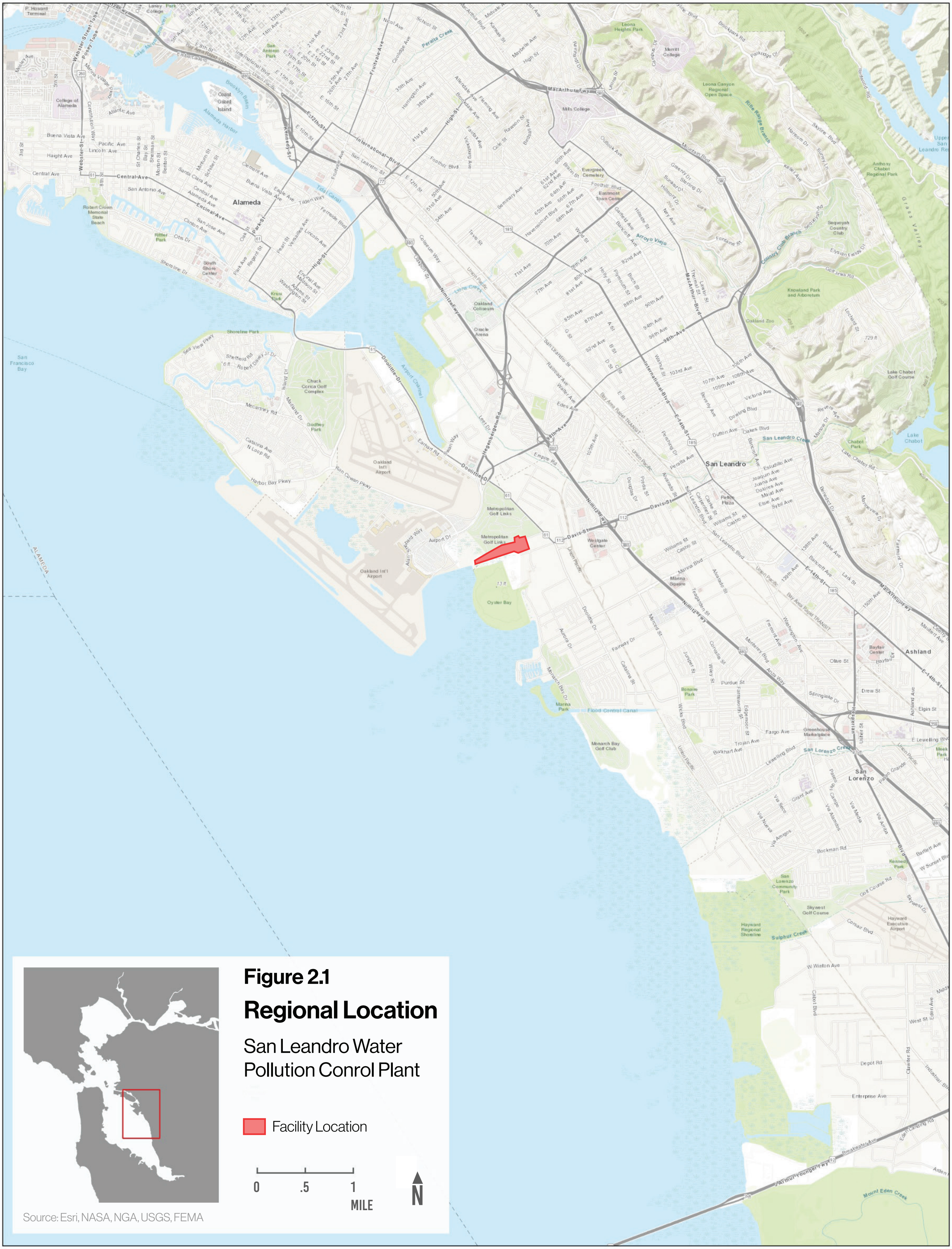

Figure 2.1

Regional Location

San Leandro Water Pollution Conrol Plant

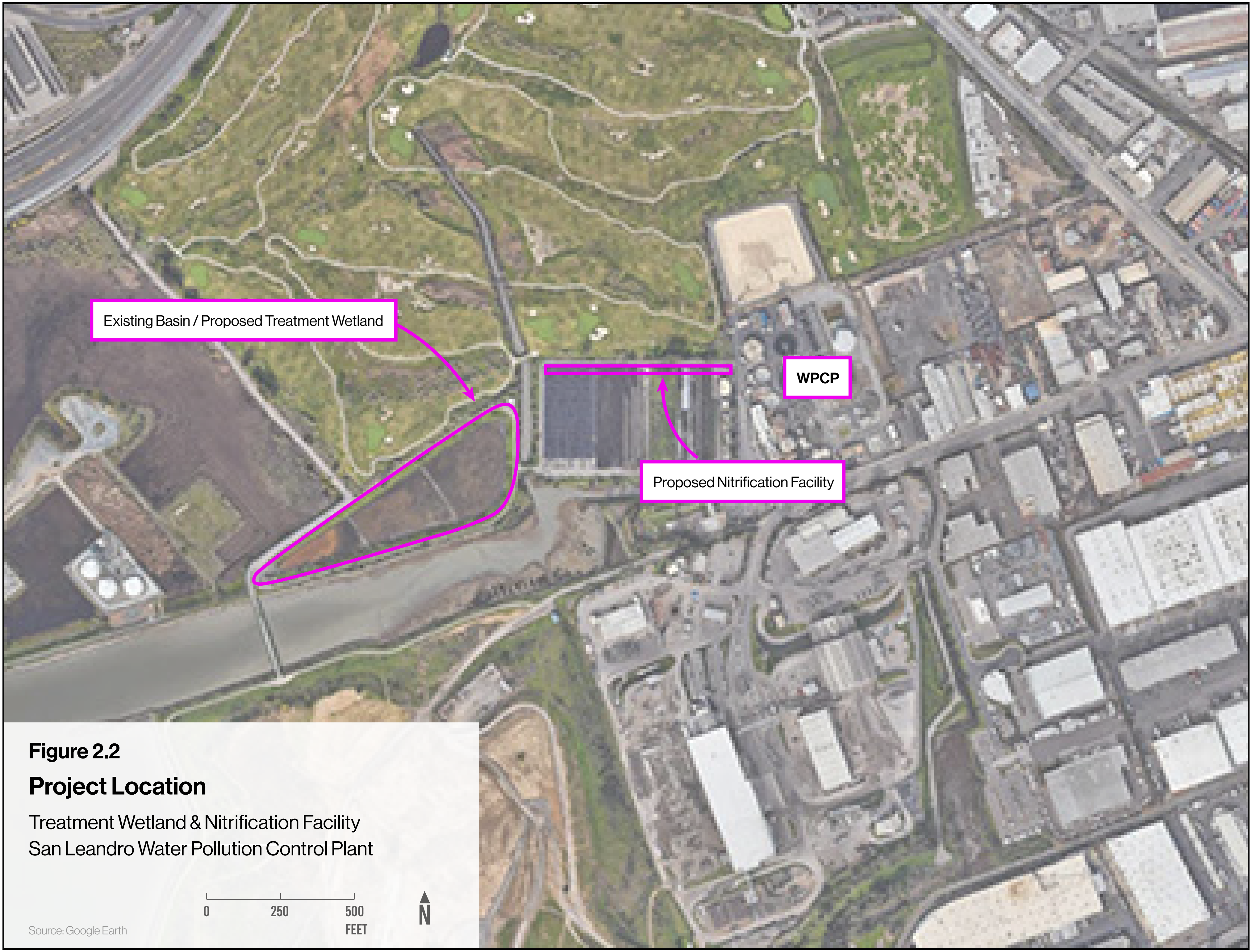

Figure 2.2

Project Location

Treatment Wetland & Nitrification Facility
San Leandro Water Pollution Control Plant

Source: Google Earth

The WPCP was initially built in 1939, making it one of the oldest wastewater treatment facilities in the East Bay, yet significant upgrades have been undertaken over the years. Treatment consists of headworks pumping, grit and screenings removal, primary sedimentation, trickling filter, activated sludge, secondary clarification, and disinfection by sodium hypochlorite. Treated wastewater from the wastewater treatment facility is transported to EBDA's system for final dechlorination and discharge to the EBDA Common Outfall. No major nitrogen removal systems are currently in place. Sludge is anaerobically digested, dewatered using a belt filter press, and further dried in open drying beds (Figure 2.3, *Process Flow Diagram*). An annual total of 95 million gallons of treated effluent is recycled and used for local golf course irrigation.

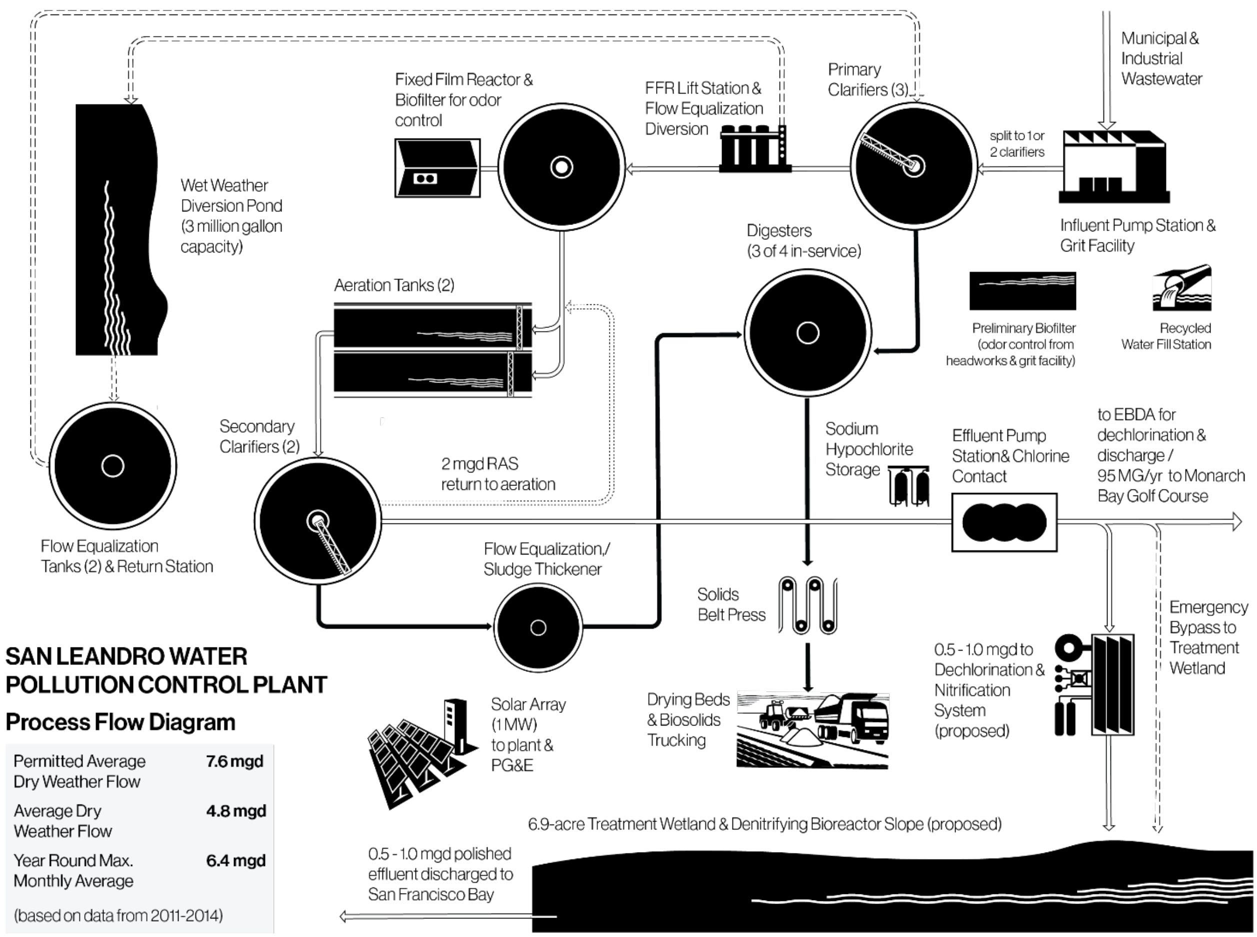

Figure 2.3. Process flow diagram for the San Leandro WPCP

Basin Conditions

The triangular-shaped basin designated for emergency wet weather retention of wastewater is situated at the western terminus of the WPCP. It is bounded by a tidal slough connected to San Francisco Bay, to the south and east, and by the Metropolitan Oakland International Airport (OAK) and the Lew Galbraith Golf Course to the north. A dike surrounds the effluent pond, with the highest point of the crest reaching approximately 12 feet NAVD88. The pond measures a maximum length of roughly 1,150 feet and a maximum width of about 350 feet. To prevent erosion, the outer side of the southern dike is armored with concrete rubble and debris along the tidal slough. The slopes on the outer side of the southern dike vary, ranging from slightly steeper than 1:1

(horizontal to vertical) to flatter than 3:1. The inner slope of the dike maintains a ratio of approximately 3:1. The dike is crowned with a paved access road on the east and south sides, and a gravel access road on the north side.

The pond's construction dates back to around 1972. Historical aerial imagery suggests that the southern dike was built sometime between 1946 and 1958. This dike underwent expansion during the basin's construction, and a new dike was erected along the northern side. The necessary fill material for widening the existing southern dike and constructing the new closure dike was obtained by excavating within the pond itself. The pond is partitioned into three segments by two timber catwalks, as depicted in Figure 2-4, *Existing Conditions*. The drawings indicate that the central section of the pond is deeper than its western and eastern ends. During the pond's construction, inflow and outflow structures were constructed at the eastern and western extremities of the pond.

Water levels within the ponds undergo seasonal fluctuations influenced by precipitation and evaporation. The surface of the pond becomes visible at the conclusion of the dry summer season, just prior to the onset of winter rains. Refer to Figures 2-5 to 2-8 for representative photos of existing conditions.

Figure 2.4. Southeast-facing aerial view of existing conditions at the Proposed Project site

Figure 2.5. Existing conditions - east-facing view at the south-east corner of the existing retention basin

Figure 2.6. Existing conditions – west-facing view at the eastern edge of the existing retention basin

Figure 2.7. Existing conditions – east-facing view from the western edge of the existing basin

Figure 2.8. Existing conditions – east-facing view of the outfall to the tidal slough south of the existing basin

Recent WPCP Upgrades

Between 2011 and 2015, the WPCP constructed a major treatment plant rehabilitation to address aging infrastructure and implement other improvements, including:

- Replaced the headworks, including a new screenings removal facility.
- Constructed a new grit facility to increase wastewater treatment efficiency.
- Rehabilitated two (2) primary clarifiers and added a third primary clarifier to enhance wet weather treatment capacity.
- Constructed a new Fixed Film Reactor and associated biofilter for odor control.
- Constructed a new three-million-gallon lined storage lagoon for storage of wet weather flows.
- Upgraded the electrical system and constructed a new administrative and laboratory building.

Additional upgrades and investments made in the last decade to increase energy efficiency and plant performance:

- Installation of a new high efficiency 'turbo blower' to provide air to the activated sludge aeration basin, significantly reducing energy consumption and operational performance.
- Installation of a 1-megawatt solar array in a repurposed portion of the WPCP's sludge drying beds to reduce energy consumption and help meet San Leandro's Climate Action Plan objectives.

2.3. Project Description

The Proposed Project involves installation of a modular nitrification system to convert ammonia, from existing secondary treated wastewater, to nitrate, and converting a 6.9-acre wastewater retention pond to multi-benefit treatment wetland. Nitrified effluent shall be polished in the treatment wetland for the removal of nutrients and other pollutants prior to discharge to San Francisco Bay via an existing discharge pipe.

The design approach utilizes a hybrid system that includes both vegetated subsurface flow wetlands (terraced bioreactors) along the basin perimeter slopes, combined with shallow free water surface (FWS) wetland areas. This will serve to enhance overall nitrogen removal rates of the system, while creating wet meadow habitat along the basin perimeter and along potential interior dike features.

The proposed treatment wetland will receive a portion of the effluent from the WPCP, not to exceed 0.95 mgd, that has passed through an engineered nitrification system with an expected nitrification efficiency of 75-90%. Expected influent NO_3-N concentrations range between 30-36 milligrams per liter (mg/L).

Polished wastewater will discharge directly to San Francisco Bay at the existing outfall located at the western edge of the existing basin, consistent with the existing NPDES permit for the Proposed Facility.

Figure 2-9 illustrates conceptual-scale features of the Proposed Project, and Figures 2-10 through 2-11 represent conceptual views of the basin and the proposed features.

Figure 2.9. Southeast-facing aerial view of anticipated conditions following implementation of the Proposed Project

Figure 2-10. Conceptual rendering at the south-east corner of the proposed treatment wetland

Figure 2.11. Conceptual rendering from the eastern edge of the proposed treatment wetland

Design Elements

The Proposed Project is comprised of the following major design elements, as summarized in Figure 2.12, *Project Overview*:

a) **Soil Relocation & Fill**

The City intends to utilize the existing stockpile of soil generated from plant upgrades in the last decade, overtopped by clean fill, to elevate the pond to the design grade. The existing stockpile is approximately 30,000 cubic yards, which is sufficient to raise the base of the basin by an average of about 5.5 ft. An additional 11,000 cubic yards of clean fill, totaling approximately 41,000 cubic yards, is needed to raise the basin to the final design height of 6.5 ft above mean sea level.

Stockpiled soil will be added to the existing sludge in the storage basin and stabilized with cement. Clean fill will be placed on top of the stabilized soil/sludge mixture and an impermeable liner shall be affixed to the top of the clean fill, which will become the bottom of the treatment wetland. The combination of cement stabilization, clean fill, and an impermeable layer overtopping the existing basin and provides a stable and elevated base while isolating low levels of legacy contamination from the overlying basin, as discussed in Section 3.10, *Hazards and Hazardous Materials*.

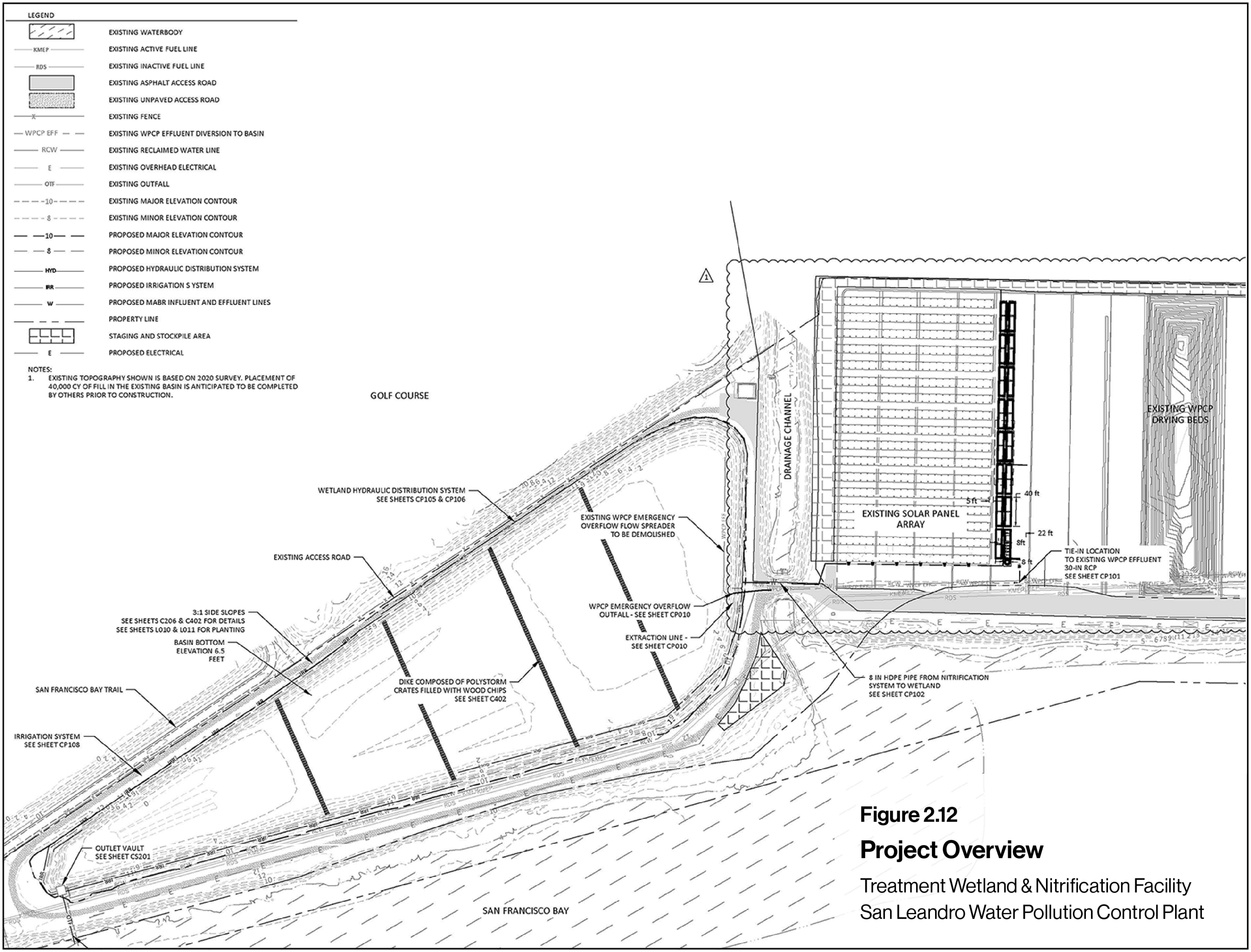

Figure 2.12

Project Overview

Treatment Wetland & Nitrification Facility
San Leandro Water Pollution Control Plant

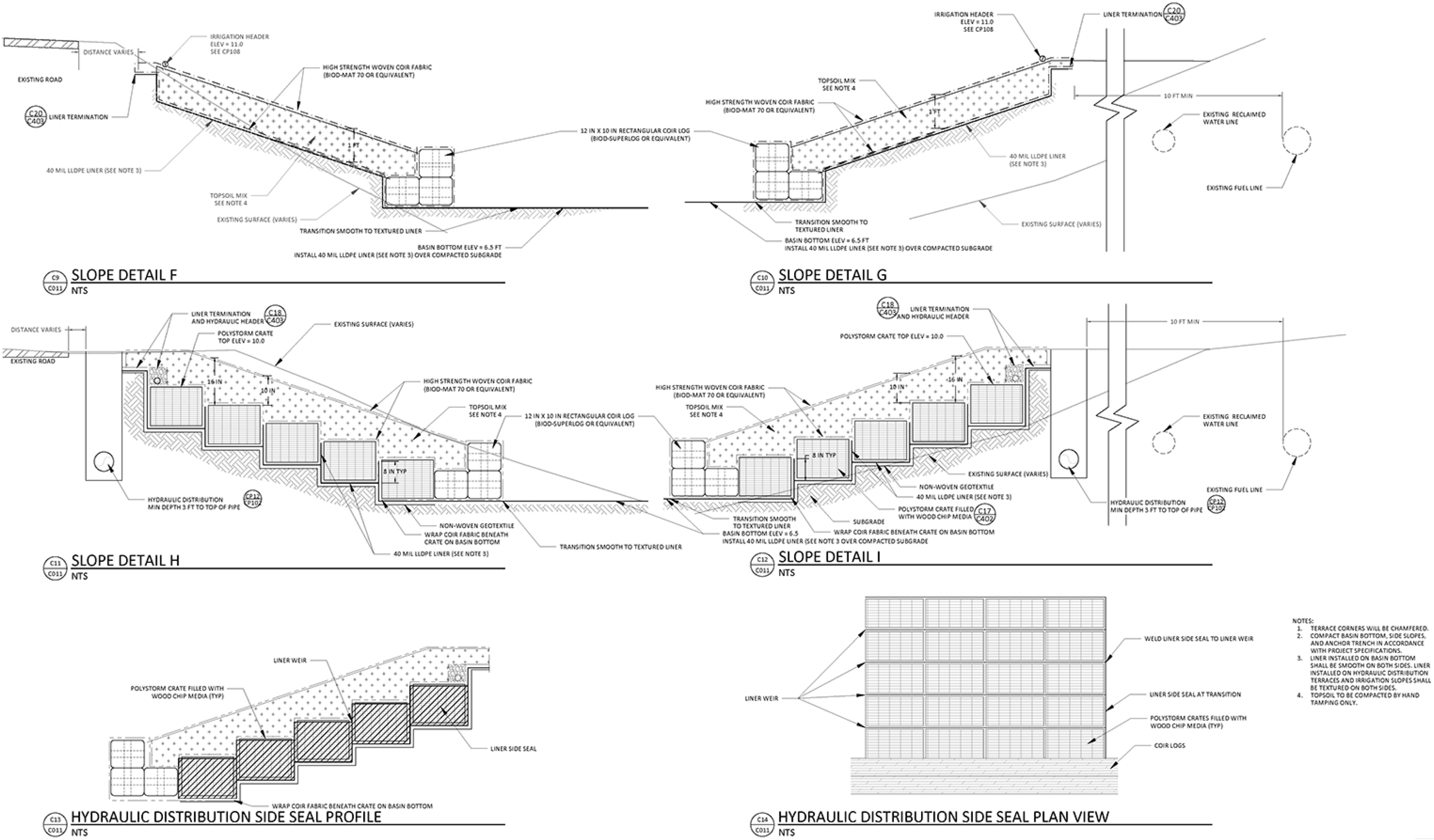

Figure 2.13

Wetland Side Slopes

Treatment Wetland & Nitrification Facility
San Leandro Water Pollution Control Plant

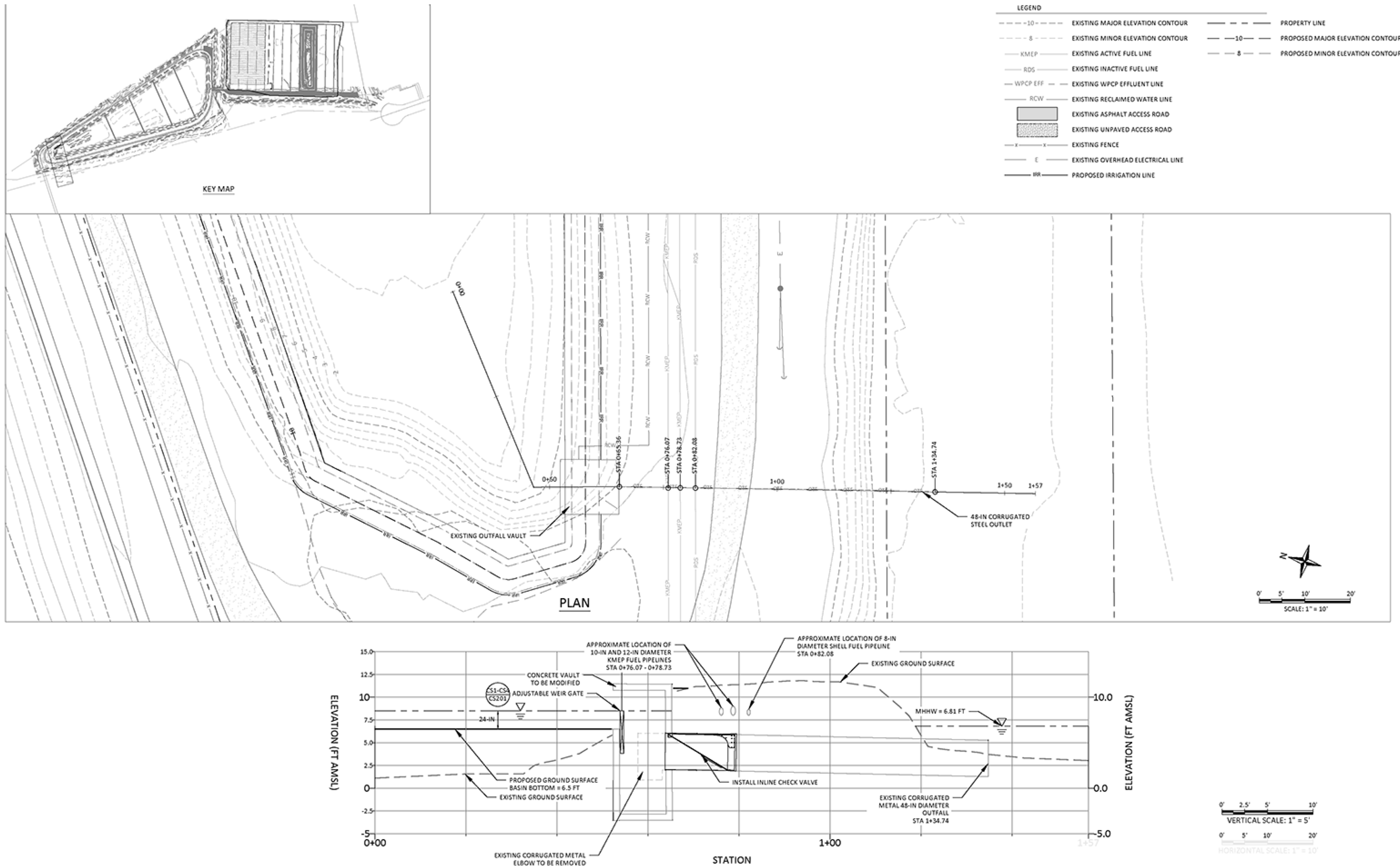

Figure 2.14

Outfall Plan & Profile

Treatment Wetland & Nitrification Facility
San Leandro Water Pollution Control Plant

b) Impermeable Liner

An impermeable synthetic liner will be placed over the compacted subgrade along the base of the basin and up the side slopes to prevent infiltration and any bypass of polished wastewater through the underlying soils. Additionally, it will inhibit the growth of unplanned plant species, which could create preferential pathways and shade the open water areas, hindering photolysis. The liner will likely consist of an impermeable 40-ml Linear Low-Density Polyethylene commonly used in lining open-water treatment wetlands, lagoons, and ponds.

c) Hydraulic Distribution System

Water will enter the wetland basin via a hydraulic distribution system, regulated by the effluent from the upstream membrane aerated biofilm reactor (MABR) nitrification system, not to exceed 0.95 mgd. This system will use perforated HDPE pipes along approximately 1,320 linear feet of the basin's edge to distribute water to the terraced denitrification bioreactors on the side slopes.

Additionally, approximately 1,200 ft of smaller irrigation lines will wrap around the remaining extent of the basin's perimeter to water wetland plants on slopes not covered by the bioreactors. Separate irrigation lines will supply water to plants around the basin, outside the bioreactor areas. These lines will contribute negligible volumes of inflow to the basin.

d) Side Slope Terraced Bioreactor

Terraced crates will be filled with wood chips along the basin's side slopes to serve as bioreactors for denitrification (Figure 2.13, *Wetland Side Slopes*). Each crate will be lined with an impermeable material both beneath and on the downstream end to manage the water flow residence time. To expand vegetated habitats, the basin perimeter slopes will be reshaped to a uniform steepness, even in areas without bioreactors.

Topsoil will cover the seepage slopes/bioreactor terraces, varying in depth from 6 to 24 inches (averaging 15 inches), topped with erosion control matting, and planted with suitable native species. This bioreactor cell design is an innovative take on the ecotone levee concept, integrating global insights on using wood chips as a conductive carbon source for enhanced denitrification.[4,5,6]

This Proposed Project's seepage slopes will differ from those in OLSD or other regional projects. Unlike the relatively flat slopes at OLSD (30H:1V), the proposed treatment wetland's existing slopes are steep (3:1). Early results from OLSD suggest rapid denitrification at the upper reaches of its levee, with nitrate becoming undetectable after about 10 horizontal feet. This is attributed to the combination of plant roots and low permeability soils creating long retention times. The Proposed Project explores the effectiveness of high permeability alluvium in supporting riparian scrub and native grasses typical of wet meadow habitats.

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[4] Schipper, L.A., Robertson, W.D., Gold, A.J., Jaynes, D.B., Cameron, S.C., 2010. Denitrifying bioreactors - An approach for reducing nitrate loads to receiving waters. Ecological Engineering, 36:11, 1532-1543. Leveren 2010, Šereš 2019, Halaburka 2017)

[5] Leveren, H.L., Haunschild, K., Hopes, G., Tchobanoglous, G., Darbya, J.L. 2010. Anoxic treatment wetlands for denitrification. Ecological Engineering, 36:11, 1544-1551.

[6] Šereš, M., Mocová, K.A., Moradi, J., Kriška, M., Kočí, V., Hnátková. T., 2019. The impact of woodchip-gravel mixture on the efficiency and toxicity of denitrification bioreactors. Sci. of the Total Env. 647:10, 888-894.

a) **Interior Dikes**

The basin will be divided into five equally sized cells using dikes constructed in various possible configurations. As water flows toward the outfall, it will pass through or over one or more dikes, each incorporating wood chips for denitrification, similar to the side slopes.

Treatment wetlands with multiple cells in series consistently yield better effluent quality, as noted by the US Environmental Protection Agency (EPA) and supported by the Iowa Department of Natural Resources, which recommends a minimum of two cells.[7,8] The wetland will be segmented into four cells using dikes to achieve these treatment objectives.

Mattress-style dikes will be constructed from a single layer of polystorm crates filled with wood chips, arranged in three rows. This design aims to minimize hydraulic short-circuiting, which is the establishment of preferential flow paths that reduce treatment efficiency.

Influent will be distributed through seepage slopes with terraced bioreactors before it reaches a shallow (~18-24 inches) FWS treatment component. The impermeable liner prevents infiltration and unwanted plant growth outside designated areas. The FWS component will be divided into multiple cells using interior dikes to maximize retention time and minimize preferential flow pathways. This arrangement will enhance denitrification and aid in the photolysis of micro-organic contaminants like pharmaceuticals and pesticides. Topsoil shall cover the terraced bioreactors and interior dikes and be planted with native species.

a) **Open Water Areas**

The open water areas, excluding the side slopes and dikes, aim for an adjustable depth of 18” to 24” for optimal denitrification. The proposed bottom elevation is 6.5 feet (NAVD88) to increase hydraulic head relative to tidal elevations at the outfall and provide some margin of safety for sea level rise. The outfall configuration will maintain the water at this depth.

Open water/FWS areas offer both nitrification and denitrification potentials due to the aerobic conditions at the top and anaerobic conditions at the base of the water column. Shallow FWS wetlands, such as unit-cell process wetlands enhance nitrate removal through photolysis, biotransformation, and biofilm formation, where anaerobic denitrifying bacteria thrive.[9]

Adding plant carbon sources like woodchips can improve nitrate removal efficiency. Optimal carbon: nitrogen ratios for treatment wetlands and bioreactors vary, and additional liquid carbon sources can further augment denitrification efficiency. If supplemental carbon is required in the future, a system would be needed to introduce this external carbon at the basin's upstream end.

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[7] United States Environmental Protection Agency (EPA), 2000. Constructed Wetlands Treatment for Municipal Wastewaters, EPA 625/R-99/010.

[8] Iowa Department of Natural Resources, 2007. Constructed Wetlands Technology Assessment and Design Guidance. August.

[9] Jasper, J.T., Z.L. Jones, J.O. Sharp, and D.L. Sedlak. 2014. Nitrate Removal in Shallow, Open-Water Treatment Wetlands. Environmental Science and Technology. 48: 11512–11520.

The current basin elevation might lead to water backing up during high tides. Raising the bottom elevation to 6.5 feet (NAVD88) using about 41,000 cubic yards of soil addresses this, which reduces the area available for riparian/wet meadow habitat around the perimeter.

b) Planting Design

The Proposed Project involves creating three types of plant communities, each suited to different hydrologic conditions. The plant selection includes native riparian, wetland, and upland species:

- <u>Wet Meadow and Riparian Scrub:</u> These species will be planted along slopes fitted with crates and effluent distribution pipes, creating a wetland-like environment similar to the OLSD project, without extra irrigation.
- <u>Emergent Wetland:</u> These plants will mainly establish at the base of slopes and in select areas, with floating vegetation expected to develop over time, requiring drainage of the basin and maintenance to ensure floating mats do not shade out the open water segment.
- <u>Uplands:</u> Portions of the slopes that do not feature seepage slopes will support upland native plants and seeds, irrigated with effluent in a controlled manner to avoid wetland conditions.

Open water areas will remain largely unplanted to aid UV penetration and treatment of effluent.

Plant species selection will focus on water quality benefits, adaptability to water depths and climate, habitat suitability, and maintenance needs. The initial plant list was based on the OLSD Horizontal Levee Project, with modifications to avoid species that could obstruct bioreactor media.

Planting is vital for wetland success. Establishing an on-site nursery for mature plants is recommended to ensure robust growth. Proper soil substrate and horticultural practices will be followed, and the planting approach will vary based on site conditions, including spacing, irrigation needs, and methods suited to wet or dry soil. Draining the wetland occasionally will aid plant establishment, weed control, and mosquito management.

c) Outfall

The Proposed Project involves modifying the existing outfall structure connecting the basin to San Francisco Bay to regulate water levels within the basin (Figure 2.14, *Outfall Plan & Profile*). A recent inspection confirmed that the structure allows tidal water and debris from the bay to enter the vault during high tides. The structure includes a concrete vault with a weir-style inlet and a 48-inch corrugated metal pipe leading to the bay.

The current weir inlet elevation would result in water depths exceeding the preferred 18 to 24 inches, necessitating modifications to adjust the water depth based on flow conditions. Modifications involve installing an adjustable weir plate in the vault.

A 30" gate valve shall be installed in the existing outfall pipe at a location upstream of the tidal extent to prevent tidal backflow into the outfall pipe during high tides and storm surges and to avoid any construction-phase work in the outboard area of the levee. Sediment build-up within the outfall pipe is also a concern, with the outlet pipe currently half-filled with sediment. Regular flow is expected to prevent complete blockage, but existing sediment might need removal at construction time. Preliminary visual inspections indicate the existing pipe liner is intact.

2.4. Project Construction

Schedule and Workforce

The active construction phase of the Project is estimated to span approximately four months, commencing around July 2024 and concluding by October 2024, as outlined in Table 2-1. Construction operations are anticipated to be predominantly scheduled on weekdays, from Monday through Friday, with operational hours from 7:00 a.m. to 5:00 p.m. Occasional work outside of these standard hours may be necessary, particularly for tasks such as integrating new facilities with existing processes. Construction crews would be comprised of ten to fifteen personnel. Parking would be available in the staging areas described below.

Table 2-1. Approximate Construction Schedule

CONSTRUCTION PHASE AND ACTIVITY	EXPECTED DURATION	ESTIMATED SCHEDULE
1) Pond dewatering, soil relocation/placement, import soil placement, and compaction	Four to six weeks	August 2024
2) Nitrification system installation	Six to eight weeks	June 2025
3) Liner installation, hydraulic distribution installation, slopes & dikes	Four weeks, concurrent with Phase 2	June-July 2025
4) Outfall Retrofit	Two weeks (concurrent with Phase 3)	Sep 2025
5) Site Restoration and planting	Two weeks	Oct 2025

Construction Equipment

The following construction equipment would be used during Project construction:

- Loader
- Trucks/Trailers
- Skid steer
- Welding and Cutting Equipment
- Water Truck
- Dozer
- Roller
- Concrete mixers/pumps/vibrators

Staging and Access

Temporary designated staging would be established within the WPCP fence line, at the southeast corner of the basin and surrounding the existing WPCP drying beds to accommodate materials delivery, storage, assembly, pipe laydown, and electrical configuration. Primary ingress and egress for construction vehicles would be from Davis Street through the WPCP.

Project-Wide Rules

The Proposed Project would include the following best management practices (BMPs) to avoid or minimize environmental impacts, which would be defined in the construction contract documents:

- Temporary erosion control measures would be implemented as specified in the Project-specific Storm Water Pollution Prevention Plan (SWPPP), as applicable. The contractor will be required to comply with NPDES/No. 2022-0057-DWQ NPDES No. CAS000002 (General Construction Permit).
- Equipment staging, material storage, and stockpile areas would be in upland areas so as not to affect jurisdictional wetlands, or any other sensitive habitat.

- A plan for the emergency cleanup of any spills of fuel or other materials would be prepared and implemented by the contractor.
- Erosion and sediment control BMPs would be installed prior to the start of any ground-disturbing activities, as detailed in the SWPPP.
- Silt fences or fiber rolls would be installed, or other suitable measures would be implemented around the perimeters of the construction zone, staging areas, temporary stockpiles, and drainage features, as detailed in the SWPPP.
- Water produced by construction site dewatering would be detained and treated using sedimentation basins located on the Project site, sediment traps (when water is flowing and there is sediment), or other measures, to ensure that discharges to receiving waters are in accordance with the State of California General Permit for Storm Water Discharges Associated with Construction Activity (General Permit).
- All stockpiles would be contained using perimeter controls such as berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale barriers. All stockpiles would be covered with polyethylene plastic sheeting or other impermeable materials.
- BMPs would be identified in the contractors SWPPP to prevent raw cement; concrete or concrete washings; asphalt; paint or other coatings; and oils or other petroleum products from entering watercourses or storm drains. All concrete waste and wash water would be either returned with each concrete truck for disposal at the concrete batch plant or disposed of at a dedicated disposal area.
- Construction vehicles and equipment would be inspected to prevent discharge and contamination of soil or water (from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease).
- Equipment would be refueled and serviced at designated construction staging areas.
- Discharge of pollutants into water bodies from vehicles and equipment would be avoided by using drip pans, spill kits, berms, and secondary containment.
- Sanitation facilities (e.g., portable toilets) would be placed in secondary containments to prevent discharges of pollutants to the stormwater drainage system or receiving water.
- Sanitary facilities would be maintained regularly.
- Hazardous materials would be stored in an area protected from rainfall and stormwater runoff and prevent the offsite discharge of leaks or spills.
- All debris materials, sediment, trash, vegetation, or other material removed from the disturbed areas would be disposed of at an approved disposal site.
- Non-tidal wetlands and waters of the United States (waters of the U.S.) to be avoided would be marked in the field.
- A Construction site Safety Plan would be developed to provide a formal, top-down, systemic approach to identify safety risk, organizational structures, responsibilities, and policies and procedures.

2.5. Project Operation

Consistent with its current operations, the WPCP will maintain a 24/7 operational schedule for the Proposed Project. No additional staff will be necessary to oversee the Proposed Project once it is completed. The WPCP will continue to receive influent wastewater in alignment with its existing average and peak flow capacities. The introduction of the new MABR system will enable year-round nitrification. Out of the 0.95 mgd of wastewater routed through the MABR system, approximately 90% of the ammonia will undergo conversion to nitrate. Nitrate removal within the treatment wetland will be monitored, with peak removal anticipated during the summer months, corresponding to elevated temperatures.

The WPCP will continue to discharge effluent into the EBDA Common Outfall, albeit with a reduction in total volumes due to the portion directed through the treatment wetland and subsequently discharged via the existing outfall pipe.

The implementation of the Proposed Project will result in increased energy consumption at the WPCP. The MABR nitrification system and associated pumps will require additional power, although it represents a less energy-intensive approach to nutrient removal when compared to other alternatives. As detailed in Section 3.7, Energy, the total energy usage at the WPCP is projected to rise by approximately 600 megawatt-hours per year.

Anticipated maintenance activities will include periodic draining, necessitating the cessation of treatment activities in the treatment wetland to address aquatic weed establishment and vegetation management. The constructed wetland will remain subject to periodic inspections by the Alameda County Mosquito Abatement District. Adaptive management strategies to prevent the establishment of mosquito populations shall be developed in coordination with the Mosquito Abatement District, consistent with ongoing practices at the WPCP.

3. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

This IS/MND examines the Project to identify potential effects on the environment. For each item on the Initial Study checklist, the evaluation has considered the impacts of the Project both individually and cumulatively. As needed, mitigation measures are included to reduce any significant impacts identified.

3.1. Approach to Cumulative Impact Analysis

Cumulative impacts are discussed at the end of each environmental topic impact discussion. The evaluation of cumulative impacts considers whether the Proposed Project could have impacts that are individually limited, but cumulatively considerable. Two approaches to a cumulative impact analysis are provided in CEQA Guidelines Section 15130(b)(1): (1) the analysis can be based on a list of past, present, and reasonably foreseeable probable future projects producing closely related impacts that could combine with those of a project, and (2) a summary of projections contained in a general plan or related planning document can be used to determine cumulative impacts. 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 within 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.

Table 3-1 lists the plans and projects in the Project vicinity considered in the cumulative impact analysis, based on the above-referenced factors.

Table 3-1. Projects Considered in the Cumulative Analysis

JURISDICTION	PROJECT TITLE	PROJECT SUMMARY	ESTIMATED CONSTRUCTION SCHEDULE	PROJECT LOCATION AND DISTANCE FROM PROPOSED PROJECT SITE
City of San Leandro	Monarch Bay Shoreline Development Project	Plans for the site include multi-family apartments with 285 units, 206 single family and townhomes, a 220-key hotel, a conference center consisting of approximately 7,500 square feet, three new restaurants, a community library, a 25-acre passive public park, and nearly 2 miles of public promenade.	Unknown	Located in and around the San Leandro Marina, approximately 1.2 miles south of the Proposed Project site
East Bay Regional Parks District	Oyster Bay Regional Shoreline Land Use Plan Amendment	Ongoing implementation of the Land Use Plan Amendment (2013) and routine maintenance activities	On-going	Oyster Bay Regional Shoreline is located approximately 0.1 miles south of the Proposed Project site.

The Proposed Project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

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

DETERMINATION: (To be completed by Lead Agency)

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.

Hayes Morehouse	February 21, 2024
Signature	Date
Hayes Morehouse	City of San Leandro
Printed Name	For

3.2. Aesthetics

ISSUES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In nonurbanized 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 which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion

a) **Effect on scenic vistas:** The Proposed Project site is situated in a developed industrial zone at the western end of Davis Street. Nearby facilities include the WPCP sludge drying beds and solar array, a waste transfer facility, OAK Airport, and a shooting range, all of which define the visual character of the area. The Project does not involve the construction of any new above-grade structures that would obstruct scenic vistas. Instead, it is expected to improve the ecological conditions and visual attractiveness of the site. Consequently, the Project's implementation will not have any adverse impact on the area's aesthetics.

Impact Designation: No Impact

b) **Damage to scenic resources:** There are no designated scenic resources in the vicinity of the Project. There would be no impact to aesthetics associated with Project implementation.

Impact Designation: No Impact

c) **Degrade public views:** The Project is expected to improve the existing visual character and quality of public views from the Bay Trail and Oyster Bay Regional Shoreline and is consistent with existing public and industrial facilities and visual quality of the area. Therefore, there would be no impact to aesthetics associated with Project implementation.

Impact Designation: No Impact

d) **Create substantial light or glare:** The area already has various light sources from existing industrial and commercial buildings, along with OAK airport. During construction, the Project will not introduce any significant new sources of light or glare, such as construction or security lighting, which would alter daytime or nighttime views in the area. Consequently, the Project's implementation will not have any impact on the aesthetics of the surroundings. In its operational phase, the Project will not add any new lighting.

e) Impact Designation: No Impact

Cumulative Impacts on Aesthetics

The potential for cumulative impacts on aesthetics is confined to the area encompassing the WPCP and its adjacent regions. Given that the Project itself is not anticipated to have any impact on aesthetics, it would not contribute to any broader cumulative impacts on aesthetics in this area.

3.3. Agriculture and Forestry Resources

ISSUES: AGRICULTURE AND FORESTRY RESOURCES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

a-e) Conflicts with agricultural or forestry resources. The Project site is classified as Public/Institutional in the San Leandro General Plan and is zoned as Industrial General.[10,11] Since the land within the Project site is neither used for agricultural nor forest land production, and there is no zoning designated for agricultural/forest use or a Williamson Act contract in place, implementing the Project will not affect agricultural and forest resources.

Impact Designation: No Impact

Cumulative Impacts on Agriculture and Forestry Resources

The potential for cumulative impacts on agriculture and forestry resources encompasses the sub-region encompassing the WPCP and its adjacent regions. Given that the Project itself is not anticipated to have any

[10] City of San Leandro. Official General Plan Land Use Map of the City of San Leandro, adopted by the City Council on December 7, 2020, under Resolution 2020-149. Available at www.sanleandro.org

[11] City of San Leandro. Zoning for the City of San Leandro, Effective 1/18/2023, Adopted by the City Council on 12/19/2022 under Ordinance 2022-022. Available at www.sanleandro.org/345/Zoning-Code-Zoning-Map

impact on agriculture and forestry resources, it would not contribute to any broader cumulative impacts on agriculture and forestry resources in this region.

3.4. Air Quality

ISSUES: AIR QUALITY	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Regulatory Setting

Air quality within the City is under the jurisdiction of the EPA and the Bay Area Air Quality Management District (BAAQMD). Alameda County is one of the seven counties that comprise the San Francisco Bay Area air basin.

Federal and State

Air quality in the area is a function of the criteria air pollutants (CAPs) and toxic air contaminants (TACs) emitted locally, the existing regional ambient air quality, and the meteorological and topographic factors that influence the intrusion of pollutants into the area from sources outside the immediate vicinity. The PPS's air quality is based on the CAPs meeting the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). The 1977 federal Clean Air Act (CAA) required the EPA to identify NAAQS to protect public health and welfare. NAAQS have been established for the six "criteria" air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), respirable particulate matter (PM), and lead. PM is designated into two size classes, coarse (10 micrometers or less in diameter [PM10]) and fine (2.5 micrometers or less in diameter [PM2.5]). The smaller size of PM2.5 allows it to enter the cardiovascular system and cause more serious health problems. For this reason, the NAAQS sets a more stringent standard on PM2.5 in ambient air quality. Pursuant to the 1990 CAA Amendments (CAAA), the EPA has classified air basins (or portions thereof) as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved.

California has adopted ambient standards that are more stringent than the Federal standards for the criteria air pollutants. Under the California Clean Air Act (CCAA), patterned after the federal CAA, areas have been designated as attainment or non-attainment with respect to CAAQS. The Bay Area's attainment status for the CAAQS is listed in Table 3-2.

Table 3-2. Regional Attainment Status for CAAQS and NAAQS

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone (O_3)	8 Hour	0.070 ppm	Nonattainment	0.070 ppm Primary same as secondary	Nonattainment
	1 Hour	0.09 ppm (180 µg/m3)	Nonattainment	N/A	N/A
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m3)	Attainment	9 ppm (10 mg/m3)	Attainment
	1 Hour	20 ppm (23 mg/m3)	Attainment	35 ppm (40 mg/m3)	Attainment
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m3)	Attainment	0.100 ppm	Unclassified
	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)		0.053 ppm (100 µg/m3)	Attainment
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m3)	Attainment	0.014	Attainment
	1 Hour	0.25 ppm (655 µg/m3)	Attainment	0.075 ppm (196 µg/m3)	Attainment
Coarse Particulate Matter 10 Micrometers or Less in Diameter (PM10)	Annual	20 µg/m3	Nonattainment	N/A	N/A
	24 Hour	50 µg/m3	Nonattainment	150 µg/m3	Unclassified
Fine Particulate Matter 2.5 Micrometers or Less in Diameter (PM2.5)	Annual	12 µg/m3	Nonattainment	12 µg/m3	Unclassified
	24 Hour	N/A	N/A	35 µg/m3	Nonattainment
Lead	30-day Average	1.5 µg/m3	Attainment	N/A	N/A
	Calendar Quarter	N/A	N/A	0.15 µg/m3	Attainment

Source: BAAQMD[12]

Note: µg/m^3= micrograms per cubic meter; N/A = not applicable; ppm = parts per million

Local

<u>Bay Area Air Quality Management District</u>

The BAAQMD controls criteria and TACs. The primary role of cities in achieving and maintaining regional air quality standards is through land use decision-making, which can affect vehicle miles traveled, and through other measures that manage the emission of pollutants. The BAAQMD identifies specific transportation control

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[12] Bay Area Air Quality Management District. "Air Quality Standards and Attainment Status". Available at https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status

measures that, together with other approaches, may help reduce emissions in the City. These contribute to regional pollution control and greenhouse gas (GHG) reduction efforts.

The BAAQMD notes a particular need to reduce exposure to particulates and TACs related to freeways and major arterials, especially those with high volumes of truck traffic, as well as exposure related to goods movement and distribution centers. Ambient concentrations of TACs are similar throughout the urbanized area of the Bay Area. The BAAQMD regulates TACs from stationary sources through their permit process; mobile sources of TACs are regulated indirectly through vehicle emissions standards and fuel specifications.

The most recently adopted air quality plan for the Bay Area is the 2017 Clean Air Plan, which provides a regional strategy to protect public health and the climate. The Clean Air Plan control strategy includes 85 individual control measures to reduce emissions which are categorized into sectors, including stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants.[13]

Environmental Setting

The primary factors that determine air quality are the locations of air pollutant sources and the amounts of pollutants emitted. Meteorological and topographical conditions, however, are equally important. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

Two types of air pollutants affect air quality in the City: CAPs and TACs. The major source of air pollutants in the City is motor vehicle emissions. Heavy commute patterns throughout the Bay Area have resulted in poor regional air quality levels. The OAK airport terminal is located approximately 0.6 miles west and Interstate 880 is located approximately one mile east of the Proposed Project site. The region's attainment status for the NAAQS is listed in Table 3-2. The Bay Area is considered a nonattainment area for ground-level O_3 and PM2.5 under both the CAA and CCAA. The area is also considered nonattainment for PM10 under the CCAA, but not the CAA. The area has attained both state and federal ambient air quality standards for CO.

The BAAQMD adopted revised Air Quality Guidelines in April 2022, which contain CEQA thresholds of significance for projects, shown in Table 3-3. These thresholds are for O_3 precursor pollutants (reactive organic gas [ROG] and nitrogen oxide [NOx]), PM10, and PM2.5, and apply to both construction period and operational period impacts. If the daily average or annual emissions of operation-related CAPs or precursors exceeds any of these thresholds, the Proposed Project would result in a cumulatively significant impact.[14] Additionally, the 2022 Air Quality Guidelines provide significance thresholds for odors at five confirmed complaints per year averaged over a period of 3 years in the project source area.[15]

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[13] Bay Area Air Quality Management District (BAAQMD). 2017. Spare The Air Cool The Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area, Final 2017 Clean Air Plan. Adopted April 19.

[14] Bay Area Air Quality Management District. 2022. California Environmental Quality Act Air Quality Guidelines. Available at https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines

[15] California Environmental Quality Act Air Quality Guidelines. Published 2012; Revised 2017, 2022, and April 20, 2023. https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines.) Accessed December 13, 2022.

The 2022 Air Quality Guidelines also contains screening criteria for operational-related CAPs for numerous land use types. They also contain odor screening distances for various facility types, which include manufacturing and industrial facilities.

Table 3-3. BAAQMD Threshold of Significance for Construction and Operational Emissions

Pollutant	Construction Related Emissions	Operations Emissions	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tpy)
Reactive Organic Gas (ROG)	54	54	10
Nitrogen Oxide (NOx)	54	54	10
Particulate Matter-Coarse (PM10)	82 (exhaust)	82	15
Particulate Matter-Fine (PM2.5)	54 (exhaust)	54	10
Fugitive Dust	BMPs	None	
Local Carbon Monoxide (CO)	None	9.0 ppm (8-hour average); 20.0 ppm (1-hour average)	

Source: BAAQMD 2022

Note: lbs/day = pounds per day; ppm = parts per million; tpy = tons per year

Sensitive Receptors

Sensitive receptors are facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.

The Proposed Project would be developed within the existing grounds of the WPCP, which is surrounding by Metropolitan Golf Links immediately to the north, Oyster Bay Regional Shoreline wildlife area to the south, and industrial facilities to the east and southeast. Open space and fueling and parking for the OAK airport are located west of the Proposed Project. The nearest sensitive receptors are residences located approximately 0.8 miles south of the Proposed Project.

Impact Discussion

The Project's potential impacts on air quality are analyzed below, with all potential impacts mitigated to less-than-significant levels.

a) **Conflict with or obstruct implementation of the applicable air quality plan:** The CCAA requires that air districts create a clean air plan that describes how the jurisdiction will meet air quality standards. As noted above, the BAAQMD released the 2017 Clean Air Plan. To fulfill State ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of O_3 precursors—ROG and NOx—and reduce the transport of O_3 and its precursors to neighboring air basins. The 2017 Clean Air Plan does not include control measures that apply directly to individual development projects. Instead, the control strategy includes control measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants. The conversion of an existing 6.9-acre wastewater storage basin into a freshwater treatment wetland that would reduce the loading of wastewater-borne nitrogen, phosphorus, and other contaminants such as pharmaceutical compounds to San Francisco Bay complies with the goals of the 2017 Clean Air Plan. Specifically, the Proposed Project would promote Natural and Working Lands Control Measure NW3 Carbon Sequestration in Wetlands. Accordingly, the Proposed Project would result in beneficial impacts associated with implementation of provisions of a local air quality plan, qualifying as No Impact in relation to the identification of significant impacts under CEQA.

Impact Designation: No Impact

b) **Increase of any criteria pollutant for which the Project region is not attaining:** Implementation of the Proposed Project would result in conversion of the existing 6.9-acre wastewater storage basin into a treatment wetland facility. Construction would occur over five phases, with two concurrent phases (refer to Section 2.4). Operation of the Proposed Project would require some maintenance activities but would not require additional employees. According to the BAAQMD's 2022 Air Quality Guidelines, for a project that requires simultaneous occurrence of two or more construction phases, a detailed assessment must be performed. Therefore, the Proposed Project-related emissions were calculated using the California Emissions Estimator Model (CalEEMod) version 2022.1.[16] In accordance with guidance provided in Appendix D of the 2022 Air Quality Guidelines, irrigated areas are assessed as City Park Land Use Type within CalEEMod. The Proposed Project consists of a project similar to an irrigated lands project and was identified as a City Park. Defaults within CalEEMod were adjusted to account for the Project specific details related to construction and operation of the Proposed Project versus a typical City Park. Construction and operation emissions would not overlap; therefore, construction and operation emissions are analyzed separately. It was assumed that construction would last approximately three months starting July 1st, 2024. All CalEEMod data tables, including input values, assumptions used, and output values, are detailed in Appendix A.

<u>Construction Impacts</u>

To estimate criteria emissions from construction equipment, anticipated construction equipment and anticipated personnel vehicle trips for each of the five construction phases were input over defaults using information provided by Project engineers. Based on the schedule and construction progression, Phases 1 and 2 were assumed to overlap. Approximately 11,000 cubic yards of fill would be required during Phase I grading and no export of soil would be necessary to develop the Proposed Project. Demolition was selected as part of Phase I to account for the removal of existing concrete debris from existing soil stockpiles on site. According to engineering calculations, it was estimated approximately 6000 tons of debris would be removed from the site to provide clean fill from the on-site stockpile. The Proposed Project would result in the temporary generation of ROG, NOx, PM10, and other regulated pollutants during construction. ROG and NOx emissions are associated with personnel vehicle trips, delivery of materials, and construction equipment exhaust. PM10 is generated during site preparation, excavation, road paving, and from exhaust associated with construction equipment.

Resulting emissions from the Proposed Project are presented in Table 3-4 and compared to the BAAQMD significance thresholds to assess CEQA impacts. As shown in Table 3-4, emissions from the

[16] California Air Pollution Officers Association (CAPCOA) in collaboration with the California Air Districts. California Emissions Estimator Model (CalEEMod) (Version 2022.1.1.21). Available at: https://www.aqmd.gov/caleemod/download-model

heavy equipment and overlap of Phases 1 and 2 result in NOx emissions of 43.3, below the BAAQMD significance threshold, but higher than typical projects due to the condensed schedule. Although construction emissions from the Proposed Project would not exceed BAAQMD thresholds, the BAAQMD requires that all projects employ BMPs for fugitive dust, regardless of whether a project exceeds applicable thresholds of significance. By implementing these BMPs, the BAAQMD considers a project's impacts to be less than significant for fugitive dust emissions. Therefore, these measures are included as Mitigation Measure AQ 1 below. As shown below, construction of the Proposed Project would not result in a cumulatively considerable net increase in a criteria air pollutant for which the air basin is classified as non-attainment with the National Ambient Air Quality Standards.

Table 3-4. Construction-Related Emissions

Year	Reactive Organic Gas (ROG)	Nitrogen Oxide (NOx)	Particulate Matter-Coarse (PM_{10}) Exhaust	Particulate Matter-Fine ($PM_{2.5}$) Exhaust
	lbs/day (max)			
2024	4.42	43.3	1.45	1.35
BAAQMD Thresholds	54	54	82	54
Exceeds Threshold	No	No	No	No

Source: BAAQMD 2022; Appendix A; Note: lbs/day = pounds per day

<u>Operational Impacts</u>

Operational emissions would result from a minimal increase in vehicle trips anticipated by off-site maintenance staff and utilization of equipment to maintain the vegetated areas. Day-to-day operations of the wetland, which are minimal, would be achieved by existing staff located on site. As shown in Table 3-5, operation of the Proposed Project would not result in a cumulatively considerable net increase in a criteria air pollutant for which the air basin is classified as non-attainment with the National Ambient Air Quality Standards.

Table 3-5. Operations-Related Emissions

	Reactive Organic Gas (ROG)	Nitrogen Oxide (NOx)	Particulate Matter-Coarse (PM10) Exhaust	Particulate Matter-Fine (PM2.5) Exhaust
	lbs/day (Max)			
Mobile	0.0003	0.0001	<0.00005	<0.00005
Area	<0.00005	-	-	-
Energy	0	0	0	0
Total	**0.0003**	**0.0001**	**<0.00005**	**<0.00005**
BAAQMD Thresholds	54	54	82	54
Exceeds Threshold	No	No	No	No

Source: BAAQMD 2022; Appendix A; lbs/day = pounds per day.

Note: [1] The mobile sources are not "new" emissions as the number of students and employees would not. Mobile emissions would continue to be regulated through the state GHG reduction actions (fuel emission and electric vehicle requirements).

Summary

As shown in Tables 3-4 and 3-5, the construction-related emissions and the operational-related emissions would not result in exceedance of the BAAQMD thresholds. Furthermore, with the inclusion of AQ-1, emissions associated with fugitive dust would be considered less than significant. Therefore, in accordance with the 2023 CEQA Guidelines, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable federal or state ambient air quality standard. Accordingly, no violation of any air quality standard or contribution to an existing or projected air quality violation would occur.

Impact Designation: Less-than Significant Impact with Mitigation

Mitigation Measure AQ-1: Implement BAAQMD Basic Construction Mitigation Measures

The following BAAQMD BMPs shall be implemented during construction through contractual and specification requirements:

- Exterior demolition and construction areas shall be watered periodically to minimize the generation of dust and dirt.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers when required. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure, 13 CCR § 2485).[17] Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and tuned in accordance with manufacturer specifications. All equipment shall be checked by a certified visible emissions evaluator.
- A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

c) **Expose sensitive receptors to substantial pollutant concentrations:** Construction activities would result in TAC emissions, principally PM_{10} and $PM_{2.5}$ from diesel exhaust of heavy construction equipment known as diesel particulate matter (DPM). The BAAQMD recommends that lead agencies assess TAC exposure to sensitive receptors within a 1,000-foot radius of a project's fence line. As noted above, the nearest sensitive receptor is over 3,500 feet (0.7 miles) to the south. While Project construction activities would generate DPM, the emissions would last approximately 3 months. Determination of impacts related to exposure to TACs is based on health risk which was assessed as

[17] 13 CCR § 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

lifetime exposure. As sensitive receptors are greater than 3,500 feet from the Proposed Project and daily emissions for three months is estimated to maximize at 1.35 pounds per day. Accordingly, with the distance and low level of emissions, Project related DPM emissions would not be considered substantial and would not result in a significant incremental cancer risk. Therefore, the impact related to exposing sensitive receptors to substantial pollutant concentrations would be less than significant.

There would be a de minimis increase in TAC emissions during operation of the Proposed Project which would strictly be related to the potential for a diesel truck to be used by off-site service personnel when such maintenance on the system is required.

Impact Designation: Less-than Significant Impact

d) Result in adverse impacts to a substantial number of people: During construction activities, construction equipment exhaust would temporarily generate odors. However, any construction-related odor emissions would be low in concentration and temporary in nature. Additionally, odors would typically be confined to the immediate vicinity of the construction equipment and the nearest sensitive receptor is over 3,500 feet to the south of the Proposed Project. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern. In summary, construction-related odor emissions would be temporary, and the Proposed Project is not considered the type of use that would generate odors that would affect a substantial number of people.

The Proposed Project would result in the conversion of a wastewater storage basin into a freshwater treatment wetland. Therefore, the Proposed Project would not result in a change in land use that would generate significant new types of odors and no objectionable odors are anticipated to result from the operational activity of the Proposed Project.

Impact Designation: Less-Than-Significant Impact.

Cumulative Impacts on Air Quality

According to BAAQMD guidance, a project's contribution to cumulative air quality impacts would be considered significant if its individual impact is deemed significant or if it conflicts with the applicable clean air plan. As previously discussed, the Project is not anticipated to result in any significant air quality impacts during construction or operation, as its emissions are projected to remain well below the BAAQMD significance thresholds. Consequently, its contribution to the cumulative air quality impact in the Bay Area is not expected to be cumulatively considerable, indicating that the associated impact would be less than significant.

3.5. Biological Resources

ISSUES: BIOLOGICAL RESOURCES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
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?	☐	☐	☐	☒

Discussion

The Proposed Project site consists of an existing storage basin and adjacent upland areas, including developed habitats, such as portions of the WPCP, levees, and underground infrastructure maintained by the Port of Oakland, which also operates OAK. For a comprehensive description of the existing habitats, plant assemblages, habitat suitability for sensitive species, and references, see Appendix B (*Biological Resources Habitat Assessment*), Appendix C (*Biological Assessment*), Appendix D (*Request for Jurisdictional Delineation*), and Appendix E, (*U.S. Army Corps Approved Jurisdictional Delineation*).

Located immediately north of a constructed tidal slough that is part of San Francisco Bay, the site is in a heavily industrialized area, historically a tidal marsh. The 6.9-acre storage basin, about 70 feet north of the tidal slough and separated by a levee with upland habitat, is surrounded by the Metropolitan Golf Course and the Bay Trail to the north, the WPCP and an indoor shooting range to the east, and a waste transfer facility to the southeast. South of the adjacent tidal slough is the Oyster Bay Regional Shoreline, a capped landfill managed as a recreational area and open space by East Bay Regional Parks (EBRPD).

In the dry season, the storage basin resembles an active salt pond, largely devoid of vegetation except around its perimeter. When not dry, it typically holds standing water until evaporation drains the pond in late summer.

The Project site's southern border features the San Francisco Bay shoreline and a historically disturbed tidal slough. Early 1990s photos show that land managed by OAK to the northwest of the storage basin was graded or disturbed but has since regained tidal marsh features. Vegetation along the tidal slough includes pickleweed (*Salicornia pacifica*), fleshy jaumea (*Jaumea carnosa*), and cordgrass (*Spartina* sp.) along the lower tidal zone; saltgrass (*Distichlis spicata*) and marsh gumplant (*Grindelia stricta var. angustifolia*) along the middle tidal zone; and upland vegetation, such as pampas grass, fennel, and coyote brush, atop of the levee.

LSA conducted a reconnaissance-level field survey in February 2020, to verify existing biological conditions, assess vegetation and wildlife habitats, and evaluate the potential presence of special-status species. This survey was informed by a desktop review of several databases, including the California Natural Diversity Database (CNDDB), the US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database, the National Marine Fisheries Service (NMFS), and the California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Plants. The biological study area included the Project site and an appropriately sized buffer for assessing potential direct and indirect impacts on biological resources.

Special status species observed in the region are identified in Table A of Appendix B (*Biological Resources Habitat Assessment*), which includes a summary of the potential for occurrence at the Proposed Project site. Tables B and C of Appendix B lists plants and wildlife observed during LSA's surveys.

The Project's potential impacts on biological resources are analyzed below, with all potential impacts mitigated to less-than-significant levels.

a) **Effects on protected species:** Appendices B and C evaluate the potential presence of 46 special-status plant and wildlife species in the region, including state and federally protected species. The Proposed Project site's habitats were assessed using various databases and surveys conducted on February 5, 2020, for their potential to support these species. A summary of the findings is presented here:

   <u>Special-Status Plant Species</u>

   While several special-status plant species have been recorded within 5 miles of the Project site, the site itself does not support suitable habitat for these plants due to previous disturbances and the presence of non-native species. Therefore, the Proposed Project is not expected to adversely impact special-status plant species.

   <u>Special-Status Wildlife</u>

   The site may support special-status animal species such as the white-tailed kite (*Elans leucurus*; California Fully Protected), Alameda song sparrow (*Melospiza melodia pusillula*; California Species of Special Concern), and pallid bat (*Antrozous pallidus*; California Species of Special Concern). Other species like the salt marsh wandering shrew (*Sorex vagrans haliocoetes*) and western snowy plover (*Charadrius alexandrines nivosus*), as well as various fish species like steelhead (*Oncorhynchus mykiss*), longfin smelt (Spirinchus thaleichthys), Pacific lamprey (*Entosphenus tridentatus*), and green sturgeon (*Acipenser medirostris*), could also be present in the vicinity, especially in the tidal slough during high tides.

Salt Marsh Wandering Shrew

The salt marsh wandering shrew, recognized as a Species of Special Concern in California, has notably restrictive food and habitat needs, perhaps more so than any other mammal in the marshes of the greater San Francisco Bay Region. This includes even the salt marsh harvest mouse, as outlined in the Life Histories and Environmental Requirements of Key Plants, Fish, and Wildlife.[18] Ideal habitats for this species are wet, medium-high salt marshes within the six- to eight-foot elevation range, abundant in driftwood and other debris, and featuring one- to two-foot high pickleweed.

The site is a diked wastewater detention basin with adjacent levees and access roads predominantly characterized by ruderal upland habitat. Consequently, the salt marsh wandering shrew is presumed to be absent from the Project area. However, if it were present, any potential impacts would be mitigated by implementing the avoidance, minimization, and mitigation measures described under Mitigation Measure BIO-1 (Avoid and Minimize Impacts to Salt Marsh Wandering Shrew). These measures include installing exclusion fencing around the work area and employing a biological monitor during initial habitat disturbance, thereby addressing risks such as direct mortality or disturbance from construction activities.

Pallid Bat and Other Special-Status Bats

The pallid bat, identified as a California Species of Special Concern, may potentially roost in structures located on or near the Project site. Although suitable roosting habitat could be present in the concrete vault box near the basin's southwestern corner, no evidence of roosting was discovered during the survey conducted. To mitigate potential impacts, Mitigation Measure BIO-2 will be enacted. This measure entails conducting pre-construction surveys simultaneously with bird surveys (Mitigation Measure BIO-3).

<u>Special-Status Birds</u>

The white-tailed kite, northern harrier, and Alameda song sparrow have been observed at or near the Proposed Project site and may nest nearby.

Nearby powerlines, trees, and fence lines offer suitable hunting perches for the white-tailed kite, northern harrier and trees in and adjacent to the Proposed Project site may provide nesting habitat for the white-tailed kite. Various shrubs, small trees, and ruderal vegetation within 250 feet of the Project site may offer viable nesting habitats for species like the Alameda song sparrow and loggerhead shrike (*Lanius ludovicianus*).

Other special-status birds could forage or pass through the area, although nesting is unlikely due to unsuitable habitat or the species' nesting range being outside the Project area. Western snowy plovers are not likely to nest in the basin due to limited suitable habitat and the prolonged period in which the basin is inundated with water during the nesting season (March 1 through September 30).

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[18] Goals Project. 1999. Baylands Ecosystem Habitat Goals. A report of habitat recommendations prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. First Reprint. U.S. Environmental Protection Agency, San Francisco, Calif./S.F. Bay Regional Water Quality Control Board, Oakland, Calif.

Project construction, including equipment staging, could disrupt resident and migratory species, particularly during breeding seasons. The noise, vibration, and heightened activity from activities like grubbing, earth moving, and operating heavy machinery may make the site temporarily unsuitable for breeding birds, even if nests aren't directly affected. Such disturbances could lead to risks of injury or death for birds, making them likely to avoid the area during construction. This avoidance could result in stress or hunger for individual birds as they are displaced into territories of other birds.

However, impacts during the non-breeding season are considered insignificant, largely due to the birds' ability to move to other high-quality foraging and nesting areas in the region. The temporary loss of habitat is deemed minor due to the developed nature of the site and the prevalence of non-native vegetation at the WPCP. Although the marsh and adjacent vegetation near the outfall pipes are of higher quality, they are not crucial breeding grounds for special-status birds. Similar foraging habitats are available nearby, so temporary disturbance to this area is also viewed as minor.

Implementation of Mitigation Measure BIO-2 would avoid potential impacts to breeding or nesting birds occurring as a result of staging or construction to a less-than- significant level. If it is not feasible to avoid the nesting season (February 1st through August 31st), conducting pre-construction nesting bird surveys and establishing buffer zones around active bird nests will be essential to minimize or prevent potential impacts.

<u>Special-Status Fish</u>

Several special-status fish species known to inhabit the San Francisco Bay might forage briefly in the tidal slough. No suitable spawning or rearing habitat exists within the slough for these species, but they could appear during higher tides.

The Proposed Project is designed to avoid any in-water work to avoid potential impacts to special status fish. Water quality considerations to avoid impact to wildlife are considered in Section 3.11, *Hydrology and Water Quality*. The construction and operation of the Project are not anticipated to significantly impact fish species. Any impacts that might occur are expected to be minimal and fall to less-than-significant levels. Since all the listed fish species in this document inhabit the same aquatic environment, the potential impacts outlined below are relevant for all these fish species equally.

Impact Designation: Less than Significant with Mitigation

Mitigation Measure BIO-1: Avoid and Minimize Impacts to Salt Marsh Wandering Shrew.

The following mitigation measures are recommended to avoid potential impacts to salt marsh wandering shrew:

- A CDFW-approved biologist shall conduct a preconstruction survey for the salt marsh wandering shrew at the appropriate time of day within the work area within 48 hours prior to the commencement of construction activities. The survey shall entail the biologist walking the work area limits to determine the possible presence of shrews. The biologist shall investigate all potential areas that may be utilized by this species for breeding, sheltering, movement, and other essential behaviors.

- Prior to vegetation removal, upland portions of the site shall be mowed for the purpose of removing cover and encouraging salt marsh wandering shrew to seek cover in the areas outside of the construction area.
- After vegetation is removed, silt exclusion fencing with wire-mesh backing shall be installed by hand along all tidal channels to prevent salt marsh wandering shrew from entering the active work area, to protect adjacent habitat from construction activities or accidental spills, and to exclude workers from adjacent habitat.
- If a salt marsh wandering shrew is observed in or near the Project area, all construction shall cease until the salt marsh wandering shrew is captured by a CDFW-approved biologist possessing the appropriate permits and relocated to other suitable habitat on the Project site in accordance with a pre-approved Sensitive Species Relocation Plan (SSRP). A brief SSRP shall be submitted to and approved by the CDFW and USFWS prior to the re-initiation of any Project activities.
- The area beneath vehicles or equipment parked in the Project area shall be checked for the presence of salt marsh wandering shrew before being moved, during construction, and during movement of staging materials within the entire Project site.
- Vehicle speed limits on the Project site shall not exceed 10 miles per hour.

Mitigation Measure BIO-2: Avoid and Minimize Impacts to Roosting Bats.

A qualified biologist shall conduct a pre-construction survey for roosting bats in all suitable bat roosting habitat (large trees, concrete vault box) within the Project area within 14 days prior to the beginning of Project-related activities. If active bat roosts are discovered or if evidence of recent prior occupation is established, a buffer shall be established around the roost site until the roost site is no longer active. If an active bat roost needs to be removed as part of the Proposed Project, the Project biologist would need to consult CDFW to determine appropriate methods for the removal of the roost. As part of CDFW's approval, a new roost site may need to be created on the Project site as mitigation.

Mitigation Measure BIO-3: Avoid and Minimize Impacts to Nesting Birds.

Project staging, Project construction, vegetation removal, or tree trimming should be performed outside of the bird nesting season (February 1st through August 31st) to avoid impacts to nesting birds; if these activities must be performed during the nesting bird season, a qualified biologist shall be retained to conduct a pre- construction survey in the Project construction and staging areas for nesting birds and verify the presence or absence of nesting birds no more than 14 days prior to construction activities or after any construction breaks of 14 days or more.

Surveys shall be performed for the Project construction and staging areas and suitable habitat within 500 feet of the Project construction and staging areas, where accessible, to locate the presence of nesting birds and raptors. If nesting birds and raptors do not occur within 250 and 500 feet of the Project site, respectively, then no further action is required if construction begins within two weeks.

If active nests are located during the pre-construction bird nesting surveys, no-disturbance buffer zones shall be established around nests, with a buffer size established by the qualified biologist. If the survey indicates the presence of active nests, no-disturbance buffer zones shall be established around the nests by the qualified biologist, as follows:

- For raptor nests, the size of the buffer zone shall be a 250-foot radius centered on the nest;
- For other birds, the size of the buffer zone shall be a 50- to 100-foot radius centered on the nest.

These distances may be adjusted depending on the level of surrounding ambient activity and if an obstruction, such as a building or structure, is within line-of-sight between the nest and construction. Reduced buffers may be allowed if a full-time qualified biologist is present to monitor the nest and has authority to halt construction if bird behavior indicates continued activities could lead to nest failure. Buffered zones shall be avoided during construction-related activities until young have fledged or the nest is otherwise abandoned.

b) **Effects on riparian habitat or sensitive natural community:** CDFW identifies certain vegetation communities as special status, indicating that they are of limited distribution in California and may also support rare plants.[19] The Proposed Project site will occur entirely on disturbed and upland habitats dominated by ruderal vegetation. Therefore, Project implementation would not result in impacts on special-status vegetation communities.

Patches of pickleweed (*Salicornia pacifica*) and three other species associated with Pickleweed Mats (CaCode 52.215.00), are present outside the construction area of the Proposed Project, in the tidal slough south of the basin (i.e., saltgrass (*Distichlis spicata*), marsh gumplant (*Grindelia stricta* var. *angustifolia*), and fleshy jaumea (*Jaumea carnosa*). These species are characteristic of Pickleweed Mats (CaCode 52.215.00). However, the Proposed Project has been designed to avoid the southern levee and tidal slough.

<u>Shellfish or Eelgrass Beds:</u>

NMFS has designated two Habitat Areas of Particular Concern (HAPC) within the San Francisco Bay-Delta region. HAPCs are defined by NMFS as the waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity. For the San Francisco Bay- Delta these are eelgrass (*Zostera marina*) and native Olympia oyster (*Ostrea lurida*) beds. Eelgrass beds are exceedingly rare in South San Francisco Bay and do not occur within the Project Site or immediate vicinity.[20]

To assess the presence of eelgrass beds in and around the Proposed Project Site, biological surveys were performed, as described in Appendix B (*Biological Resources Habitat Assessment).* Areas in the vicinity of the Proposed Project site do not contain any shellfish beds or eelgrass beds. The tidal slough within the Action Area is not located in designated shellfish or eelgrass habitat and no shellfish beds or eelgrass were observed at or near the outfall during field surveys.

While no impacts are anticipated to any riparian habitat or other sensitive natural communities, the Proposed Project site is adjacent to a tidal slough and includes placement of an underground pipe over a culvert which facilitates flow from a tidally influenced ditch, which bisects the access roads

[19] California Department of Fish and Wildlife. California Sensitive Natural Communities. Updated June 1, 2023. Available at: https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities

[20] Boyer, K.E. and S. Wyllie-Echeverria. 2010. San Francisco Bay Subtidal Habitat Goals Report, Appendix 8-1: Eelgrass Conservation and Restoration in San Francisco Bay: Opportunities and Constraints. Available at https://sfbaysubtidal.org/report.html

between the existing basin and the solar array. To avoid any inadvertent impacts to these areas, Mitigation Measure BO-4 serves to further ensure avoidance of any impacts to sensitive natural communities.

Impact Designation: Less than Significant with Mitigation

Mitigation Measure BIO-4: Exclusionary Fencing and other Avoidance Measures.

- Prior to initiation of construction activity, 48-inch silt exclusion fencing shall be installed by hand along the southern edge of the access road running on top of the levee between the basin and San Francisco Bay, as well as on either side of the access road where it crosses the culvert between the basin and the solar array. The purpose of the fencing is to protect habitat within the tidal channel from earthmoving activities or accidental spills, and to exclude workers from the channel.
- Prior to construction, all construction workers shall take part in a worker environmental awareness program conducted by a qualified biologist. The awareness program will be conducted at the start of construction and thereafter as required for new construction personnel. Personnel shall be instructed to avoid areas beyond the exclusionary fencing and any other precautions intended to ensure avoidance pursuant to Mitigation Measure BIO-1 through BIO-3.
- Vehicle speed limits on the Project site shall not exceed 10 miles per hour.

c) **Impacts to protected wetlands:** Wetlands fall under the jurisdiction of the U.S. Army Corps of Engineers (Corps) and RWQCB under Sections 404 and 401 of the Clean Water Act, respectively. A preliminary delineation of waters of the U.S. was performed in April 2020 by LSA (Appendix D, *Request for Verification of Jurisdictional Delineation*) and verified by the Corps on December 16, 2020 (Appendix E, *U.S. Army Corps of Engineers Approved Jurisdictional Delineation*). The Corps excluded the basin as a water of the US and identified 0.13 acres of wetlands and 2.26 acres of mudflats within the delineation study area. The wetlands and mudflats are adjacent to the tidal slough, which is excluded from the construction area.

CDFW is responsible for conserving, protecting, and managing California biological resources, and Fish and Game Code Section 1602 requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake and to prepare a SAA if CDFW determines the activity may substantially adversely affect fish and wildlife resources. Based on discussions to date, CDFW considers tidal sloughs within the jurisdiction of Section 1600 of the Code where that slough is connected to, and receives flow from, a river or stream. Observations of upstream conditions were made, supported by the review of available documentation, to verify whether the engineered tidal channel that runs through San Leandro's WPCP connects to a river or stream.

In the late 1990s, Alameda County's stormwater program sponsored a project to develop a *Creek & Watershed Map of Hayward & San Leandro*.[21] This map stemmed from an extended initiative of the Oakland Museum of California to create a Guide to San Francisco Bay Area Creeks, the data for which is hosted on Oakland Museum of California's website. Information used in that project included the historical ecology of regional watersheds and stormwater infrastructure, given the conversion of most urban creeks in the region to engineered stormwater channels and underground culverts.

Figure 3-1 provides a detail view of the Project location and the channel in question, from the *Creek & Watershed Map of Hayward & San Leandro*. The figure shows the engineered channel that runs north-south within the San Leandro WPCP to be isolated from any stream or river, including San Leandro Creek.

Figure 3-1. Detail view of the *Creek and Watershed Map of Hayward and San Leandro*, showing the Project location and the tidal channel in question. The engineered channel (solid red line) is connected to underground culverts and storm drains (dashed lines) without connectivity to a stream or river, including San Leandro Creek.

The engineered channel meets San Francisco Bay at the southeast corner of the basin under consideration for conversion to a treatment wetland. This channel flows through the Metropolitan Golf Links, formerly known as the Lew Galbraith Golf Course – created from a dredged materials disposal area. Based on historical aerial imagery, retention basins were constructed within the golf course between the years 2000 and 2002. Based on communications with golf course management, the retention basins are filled with well water and used for irrigation.

The pre-existing channel that flowed through the golf course was culverted and connected to a retention pond along the northern perimeter of the golf course. Alameda County Flood Control District maintains the pond, which is fed with municipal stormwater. During the wet season, stormwater is routed from the detention basin under the golf course and to the tidally influenced engineered channel. The irrigation ponds are also connected to the engineered channel, yet likely only discharge following wet weather events.

Based on information regarding the hydrology and local site history, the engineered channel adjacent to the Project site does not maintain connectivity to San Leandro Creek or any other stream or river.

[21] Sowers, J. Creek & Watershed Map of Hayward & San Leandro; Guide to San Francisco Bay Area Creeks; The Oakland Museum of California: Oakland, CA, 1996. Available at http://explore.museumca.org/creeks/MapHay.html

The channel receives wet weather stormwater discharges from municipal sources and may receive some overflow from the ornamental irrigation ponds at Metropolitan Golf Links. During observations made at low tide, the channel receives no freshwater contributions during dry weather, and a flap gate controls wet weather discharges from Alameda County Flood Control District infrastructure, which receives municipal stormwater.

San Leandro's Project will not influence the tidal channel in question. During construction, access to the constructed wetland area requires crossing a culvert through the tidal channel. A construction-phase buffer shall be defined by silt fencing in areas in proximity to the culvert, to minimize the likelihood of deposition of debris, waste, or other material into the channel. The WPCP shall consult with CDFW to evaluate the need for a Streambed Alteration Agreement.

<u>Construction-phase impacts to wetlands</u>

The tidal slough surrounding the outfall from the basin is considered federally protected wetlands. However, the Proposed Project has been designed to avoid in-water rehabilitation work on the outfall pipeline. An in-line gate valve shall be installed between the concrete vault box and the outfall from within developed areas to avoid impacts to wetlands or other waters of the United States. Further, these areas shall be excluded from the construction area and exclusionary fencing shall impede access during the construction phase (Mitigation Measure BIO-4). Therefore, Project construction would have a less-than-significant impact on wetlands or other waters associated with San Francisco Bay.

<u>Operation-phase impacts to wetlands</u>

Upon completion of construction, the Project will enable the discharge of tertiary-treated effluent through the existing outfall pipelines. As detailed in Section 3.11, Hydrology and Water Quality, the operation of the Project will improve nutrient removal, comply with existing waste discharge requirements, and not significantly degrade water quality.

Impact Designation: Less than Significant

d) **Effects on migratory fish or wildlife:** The Proposed Project site, part of the WPCP and an industrialized area, does not contain any terrestrial migratory wildlife corridors, migratory stopover sites, or native wildlife nursery sites. Consequently, no direct impacts to these biological resources are anticipated. The disturbances from rehabilitating and retrofitting the existing basin are both temporary and limited in scope, so they are unlikely to affect the movement of terrestrial species to or from nearby riparian, marsh, and tidal slough habitats. Given the industrial nature of the Project site, any wildlife species present in or around the site are likely already accustomed to a high level of disturbance. Thus, any temporary impacts arising from the Project are expected to be less than significant.

<u>Construction-phase Impacts to Fish</u>

No impacts on fish migration corridors are anticipated from construction-phase activities due to the implementation of the Proposed Project. The Project has been strategically designed to prevent any in-water work. Moreover, it does not involve the construction of any new infrastructure within the Bay, ensuring that no structural barriers to fish migration will be created by the Project.

Operation-phase impacts to fish

As previously mentioned, the main impact of the Project's operation on fish is an increase in turbidity due to the startup and initial discharges of tertiary-treated effluent. During these discharge events, it's unlikely that special status fish will be present, and if they are, they are expected to swiftly vacate the immediate areas. Therefore, the impact of the Project on fish migratory pathways is anticipated to be less than significant.

Impact Designation: Less than Significant

e) **Conflicts with local policies or ordinances:** The Proposed Project would not conflict with any local policies or ordinances protecting biological resources. The Project site is classified as Public/Institutional in the San Leandro General Plan and is zoned as Industrial General.[22,23] Accordingly, the Proposed Project would not conflict with San Leandro General Plan policies protecting biological resources. The San Leandro adopted a Climate Action Plan in 2021, which includes several climate adaptation strategies involving the use of green infrastructure for water quality improvement and community resilience, which is consistent with the objectives of the Proposed Projects.[24] Accordingly, the Proposed Project would not conflict with any local policies or ordinances protecting biological resources.

Impact Designation: Less than Significant

f) **Conflicts with approved habitat conservation plans:** There is an approved East Alameda County Conservation Strategy (ICF International, 2010) for eastern Alameda County, but the Project site is not located within its boundaries, therefore the Project would not conflict with the provisions of an adopted or approved local or regional conservation plan.

Impact Designation: No Impact

Cumulative Impacts on Biological Resources

The Project, along with other current or anticipated projects, is unlikely to lead to cumulative impacts on biological resources. It is confined to the WPCP boundaries and is not anticipated to affect sensitive or ecologically significant habitats. Measures will be taken to mitigate any potential impacts on nesting birds and small mammals, ensuring that the Project does not contribute to significant cumulative impacts on these resources.

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[22] City of San Leandro. Official General Plan Land Use Map of the City of San Leandro, adopted by the City Council on December 7, 2020, under Resolution 2020-149. Available at www.sanleandro.org

[23] City of San Leandro. Zoning for the City of San Leandro, Effective 1/18/2023, Adopted by the City Council on 12/19/2022 under Ordinance 2022-022. Available at www.sanleandro.org/345/Zoning-Code-Zoning-Map

[24] City of San Leandro. 2021. San Leandro 2021 Climate Action Plan. Available at www.sanleandro.org

3.6. Cultural Resources

ISSUES: CULTURAL RESOURCES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Discussion

Cultural resources encompass historic architectural resources, archaeological resources, and human remains, while paleontological resources include the fossilized remains of vertebrate and invertebrate organisms, tracks, trackways, and plant fossils. This section draws from the Cultural Resources Inventory Report prepared for the Proposed Project and assesses potential impacts on cultural and paleontological resources in the Project's vicinity (see Appendix F, *Cultural Resources Report*). This assessment builds upon a previous cultural resource investigation conducted in 2018 for the adjacent solar array project at the WPCP. Mitigation measures to minimize impacts to less-than-significant levels are identified.

A records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University was completed by LSA on December 9, 2020 (File No.: 20-0924). This review covered the Area of Potential Effect (APE) and a 0.25-mile radius around the Project, accessing previous surveys, studies, and archaeological site records.

Historic Resources for Alameda County from the California State Parks Office of Historic Preservation were also reviewed. This list includes sites of historical significance evaluated for inclusion in various registers and inventories. The records search aimed to 1) ascertain if known cultural resources were recorded within or near the APE, 2) evaluate the likelihood of unrecorded cultural resources based on historical references and nearby sites, and 3) establish a context for identifying and evaluating cultural resources.

The records indicated that the Proposed Project site underwent at least two cultural resource surveys in the past. Additionally, eight other cultural studies were conducted within 0.25 mile of the current WPCP Project area, including surveys, monitoring, and SHPO concurrence studies. Moreover, 28 overview studies from the NWIC are listed in Table A of Appendix F, *Cultural Resources Report*. None of these studies identified any cultural resources, including archaeological sites or historic-period architectural resources. No cultural resources have been previously identified within the current Project area.

LSA conducted a survey of the Project area on November 13, 2020, finding no cultural resources. The research and survey results suggest that intact cultural resources are highly unlikely to be present in the Project area. Historical reports and aerial photographs indicate that the Project area was historically an intertidal marsh.

Aerial photos from 1946 and 1958 show the current pond area completely underwater at that time, indicating it is now composed of highly disturbed fill sediment.

a) **Substantial change to historical resources.** According to Section 15064.5 of the CEQA Guidelines, the lead agency is responsible for assessing a project's impact on historical resources. These resources are defined as any buildings, structures, sites, or objects that are either listed in, or deemed eligible for listing in, the California Register. They can also be considered significant by a lead agency in various fields including architecture, engineering, science, economics, agriculture, education, society, politics, or culture in the context of California's history. For the Proposed Project site, no historic resources have been identified in or around the area. Therefore, the Proposed Project is not expected to have any impact on historical resources.

   Impact Designation: No Impact

b) **Substantial change to archaeological resources.** This section addresses archaeological resources, considering them both as historical resources per Section 15064.5 and as unique archaeological resources as outlined in Section 21083.2 (g).

   During the background research and surface survey, no unique prehistoric or historic-period archaeological resources were discovered within the Project area. Given the findings of the surface survey, the distribution of nearby sites, and the history of disturbance in the Project area, no further archaeological investigation or construction monitoring is currently deemed necessary. However, in the unlikely event that archaeological resources are discovered during the Project's implementation, the following mitigation measure would be employed to ensure that any potential impacts are reduced to a less-than-significant level.

   Impact Designation: Less than Significant with Mitigation

   Mitigation Measure CR-1: Inadvertent Discovery of Cultural Resources.

   Should any prehistoric or historic-period archaeological resources be discovered during construction, all activities within a 100-foot radius must immediately cease, and San Leandro should be informed. An archaeologist qualified by the Secretary of the Interior standards must inspect the site within 24 hours of the discovery. Should the findings be deemed as either a historical resource or a unique archaeological resource (as defined by the CEQA Guidelines), appropriate mitigation measures will be taken in line with PRC Section 21083.2 and Section 15126.4 of the CEQA Guidelines, favoring preservation in situ whenever possible.

   In accordance with Section 15126.4(b)(3), preservation in situ may be achieved through various means such as adjusting construction plans to avoid the resource, integrating the resource within a designated open space, covering the resource with a protective cap, or transferring the site into a permanent conservation easement. If avoidance is not feasible, a detailed treatment plan will be developed and implemented by a qualified archaeologist in consultation with San Leandro and any relevant Native American tribes.

   Treatment of unique archaeological resources will adhere to the stipulations of PRC Section 21083.2. Generally, treatment might involve selective excavation, artifact collection, thorough site documentation, and historical research, all aimed at salvaging important scientific data from the impacted portions of the resource. The treatment plan should include provisions for analyzing the data in a regional context, timely reporting of results, proper curation of artifacts and data in an approved facility, and dissemination of the reports to local and state repositories, libraries, and interested professionals.

c) **Disturbance to human remains.** The Project area does not show any signs of being used for burial purposes, either in recent times or in the distant past. However, if human remains are unexpectedly found during the construction of the Project, all work in the vicinity will be immediately stopped. Disturbing human remains would be considered a potentially significant impact. To address this, the following mitigation measure has been established to reduce any potential impacts to a level that is less than significant.

Impact Designation: Less than Significant with Mitigation

Mitigation Measure CR-2: Inadvertent Discovery of Human Remains.

If human remains are discovered during construction activities, all work within 100 feet of the site must stop immediately. The Alameda County Coroner must be notified to ascertain whether an investigation into the cause of death is necessary. If the remains are determined to be Native American, the Native American Heritage Commission (NAHC) must be contacted within 24 hours.

The NAHC will identify the person or persons believed to be the most likely descendant(s) of the deceased Native American. These individuals will then provide recommendations to San Leandro regarding the proper treatment of the human remains and any associated grave goods.

Cumulative Impacts on Cultural Resources

The scope of cumulative impacts associated with cultural resources is focused on areas nearby where the Project could disturb historical and archaeological resources, or human remains. Since the Project is not expected to impact historical structures or paleontological resources, no significant cumulative impact is anticipated in these areas. However, both this Proposed Project and other future projects in the vicinity may affect undiscovered archaeological resources or human remains during construction. The combined potential impacts of these projects could be significant regarding buried archaeological resources or human remains. Nonetheless, the application of Mitigation Measures CR-1 and CR-2, which mandate halting work for evaluation by a qualified archaeologist or the County Coroner in case of finding human remains, will minimize these impacts. Additionally, other projects undergoing CEQA review will implement similar discovery protocols. Therefore, with these mitigation measures in place, the Project's contribution to cumulative impacts on archaeological resources or human remains is deemed not considerable, leading to a less than significant impact.

3.7. Energy

ISSUES: ENERGY	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Discussion

a) **Wasteful energy consumption.** The Project's construction, slated for 2024 and 2025, will involve both direct and indirect energy use, primarily through fuel consumption. Direct energy usage encompasses petroleum use for operating various construction machinery (such as excavators, front end loaders, dozers, water trucks, and handheld tools) as well as construction and employee vehicles. Indirect energy usage includes activities like the extraction and refining of crude oil to produce the fuels needed for the Project's construction. However, the energy consumption linked to the Project's construction is not expected to significantly increase overall energy use and is only temporary.

The WPCP currently generates a portion of its total power demand with solar panels. The new facilities planned in the Project, including a pump station and nitrification facility, will partially rely on existing on-site power sources. The full-time operation of the nitrification facility, assuming 70% uptime of pumps and instrumentation to transport and nitrify 0.95 mgd, is estimated to increase the total energy use at the WPCP by about 600 megawatt-hours per year once the Proposed Project is operational.

The Proposed Project will consume energy during both its construction and operational phases, but it is designed to avoid wasteful or unnecessary use of energy. Therefore, it is not expected to have any negative impact in terms of wasteful, inefficient, or unnecessary energy consumption.

Impact Designation: No Impact

b) **Conflicts with energy policy.** The Proposed Project will not conflict with existing energy efficiency policies and standards, and as such, it is not anticipated to have any adverse impact in this regard.

Impact Designation: No Impact

Cumulative Impacts on Energy

The analysis of potential cumulative impacts on energy resources considers the WPCP and the broader regional context. The Proposed Project's construction phase will use typical amounts of fuel and electricity, but this energy demand is temporary and not expected to impact energy resources or lead to significant inefficiencies. The focus of energy-related impacts is thus on the Project's operational phase. The operation of the Proposed Project will require additional energy, potentially leading to slightly higher electricity demand compared to current levels. Nonetheless, the Project's design promotes energy efficiency compared to other wastewater treatment and nitrogen removal methods, minimizing wasteful energy use. Similarly, other cumulative projects in the vicinity will consume fuel and energy for construction and operation. However, these projects are expected to adhere to existing energy efficiency policies, ensuring that any increase in energy demand does not equate to inefficient or wasteful energy use. Therefore, the combined effect of these projects, including the Proposed Project, is not anticipated to cause significant cumulative energy impacts.

3.8. Geology and Soils

ISSUES: GEOLOGY AND SOILS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
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?	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), 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?	☐	☐	☒	☐

Discussion

a) **Earthquake and Landslide Risk (a.i-a.iv):** The Alquist-Priolo Earthquake Fault Zoning Act requires the California Department of Conservation and the California Geological Survey (CGS) to identify zones around active and well-defined faults to limit the construction of structures for human occupancy near active fault traces. While the Proposed Project site is not located within an Alquist-Priolo Earthquake

Fault Zone, it's important to note that fault rupture is not confined exclusively to these mapped zones.[25]

The closest active faults to the Project site are the Hayward Fault, approximately 3.5 miles east, and the San Andreas Fault, around 15 miles southwest. Although fault rupture can occur beyond designated hazard zones, the risk is generally lower outside these mapped areas. Given the nature and design of the Proposed Project, which does not involve residential or human-occupied facilities, the risk of property damage or injury/loss of life due to fault rupture or strong seismic shaking is considered less than significant.

The Project does not entail the construction of structures, and while liquefaction is possible at the site, the Project's purpose is to stabilize soils and sludge within the basin, thereby not enhancing liquefaction risk. Additionally, the construction and operation of the Project are not expected to exacerbate existing seismic or landslide hazards in the area, as there will be no alteration to groundwater levels or drainage patterns of groundwater and surface water. Moreover, there will be no excavation near landslide-prone areas or any activities that could increase the susceptibility of the site to liquefaction or ground shaking.

Given these factors and the absence of residential or human-occupied facilities, the likelihood of the Project exacerbating risks of property damage or personal injury due to seismic events is minimal.

Impact Designation: Less than Significant Impact

b) **Increase erosion:** The construction of the Proposed Project, which entails ground-disturbing activities like grading and other earthworks, would temporarily increase the site's vulnerability to erosion. Despite these activities being planned for the dry season, the Project will develop and implement a construction-phase SWPPP, as detailed in the Hydrology and Water Quality section below. This SWPPP will incorporate specific BMPs such as silt fences, fiber rolls, and dust suppression techniques to effectively control or reduce erosion during construction. Moreover, as further described in Section 3.11, Hydrology and Water Quality, the Project is designed not to modify the current drainage patterns in a way that could lead to new erosion or sedimentation issues.
Impact Designation: Less than Significant Impact

c) **Unstable geology or soils:** The soil composition at the Proposed Project Site is characterized by artificial fill layered over Young Bay Mud, with older alluvial deposits beneath. The depth to bedrock is estimated to be around 1,000 feet deep, although not precisely determined. Subsurface investigations revealed that the dike surrounding the pond primarily consists of moderate- to high-plasticity clay fill with variable silt content.[26] Organic materials from Young Bay Mud deposits were found in parts of the southern dike.

The Proposed Project's objective is to establish a durable subgrade in the existing pond by improving soil conditions to support the placement of fill material for the planned treatment wetland. These

[25] California Department of Conservation. *California Earthquake Hazards Zone Application*. Updated September 32, 2021. Accessed on December 11, 2023. Available at https://www.conservation.ca.gov/cgs/geohazards/eq-zapp

[26] Fugro Consultants, Inc. 2014. Geotechnical Feasibility Study: WPCP Former Polishing Ponds Equipment Pad Project, San Leandro, California. Prepared on behalf of the San Leandro Water Pollution Control Plant.

improvements involve soil mixing and cement stabilization to meet the required grade, impermeable liner installation, and support the weight of retained water and construction equipment like excavators or bulldozers.

The existing basin may not adequately support the proposed developments without proper engineering to contemporary standards. However, the Proposed Project will adhere to construction specifications for soil and cement mixing prepared by a licensed geotechnical engineer, including specifications for site preparation and compaction requirements for the basin's base. It's crucial to note that the Project does not involve constructing buildings or structures.

With the supervision of a licensed geotechnical engineer, earthwork activities will be managed to mitigate potential impacts associated with unstable soils, ensuring they are less than significant. The Proposed Project aims to enhance the stability of the existing basin, facilitating construction and operations without increasing the likelihood of on- or off-site hazards like landslides, subsidence, liquefaction, or collapse.

Impact Designation: Less than Significant Impact

d) **Risks from expansive soil:** soils with significant clay and silt content, often referred to as expansive soils, can undergo volume changes with variations in water content, leading to potential damage to structures built upon them. However, the Proposed Project does not involve the construction of any buildings or structures that would be susceptible to such soil movements.
Moreover, the Project includes soil stabilization measures such as filling and cement mixing, along with installing an impermeable liner over the basin surface. These actions aim to stabilize the water content levels in the soils within the basin, effectively mitigating the risks associated with expansive soils.
Therefore, the Proposed Project's approach would eliminate any potential impacts related to risks to life or property arising from changes in expansive soils, as no structures are being built, and the soil stabilization measures would prevent soil movement.

Impact Designation: Less than Significant Impact

e) **Soils capable of supporting septic tanks or alternative wastewater disposal systems:** While the Proposed Project forms part of the WPCP wastewater treatment train, it does not involve using septic tanks or alternative wastewater disposal methods. Consequently, there are no impacts related to supporting septic systems. Furthermore, the Project does not introduce additional wastewater contributions, and the lack of septic systems in its design eliminates potential environmental or infrastructure impacts associated with their installation, maintenance, or operation. Hence, the wastewater treatment approach of the Proposed Project negates the necessity for septic systems or alternative wastewater disposal, leading to no associated impacts.

Impact Designation: No Impact

f) **Less than Significant Impact.** Based on cultural resource studies conducted for the site (refer to Appendix F), historical maps and aerial images indicate that the Proposed Project site was previously submerged under the San Francisco Bay. Sea levels in the bay have remained relatively stable over the last 4,200 years, a period known as the Late Holocene. Before this period (> 4,200 years ago), the site was part of the San Francisco Bay shoreline. While no distinct geological features are present, there is a potential for buried paleontological resources, such as fossilized plants and animals and their imprints, from previous geological eras.

However, the site has undergone significant disturbance and elevation due to fill material from unidentified sources. Consequently, the likelihood of intact paleontological resources being present is low. The grading activities associated with the Proposed Project are confined to the placement and movement of onsite stockpiled soils and imported fill. Therefore, the Proposed Project is expected to have a minimal impact on paleontological resources or unique geological features.

Impact Designation: Less than Significant Impact

Cumulative Impacts on Geology and Soils

The impacts associated with geology and soils are typically localized, with minimal potential for cumulative regional effects. Geological conditions can vary significantly even over short distances, resulting in distinct outcomes in nearby areas. Unless a project substantially modifies the underlying soils and rocks of adjacent projects or heightens the risk of landslides in surrounding regions, its impacts related to geology, soils, and seismic hazards are confined to its location. Consequently, the potential for cumulative impacts concerning these factors is restricted to the site and any immediate neighboring projects.

Ongoing maintenance activities occur at Oyster Bay Regional Shoreline, which is not anticipated to affect the local geology, soils, or seismic hazards in the immediate area. Therefore, it is concluded that the Project would not contribute to any cumulative impacts on geology, soils, and seismicity.

3.9. Greenhouse Gas Emissions

ISSUES: GREENHOUSE GAS EMISSIONS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion

a) **Generate significant GHG emissions:** The Proposed Project's construction would involve using heavy equipment, trucks, and employee vehicles to convert an existing wastewater storage basin into a treatment wetland. BAAQMD has not established a quantitative significance threshold for evaluating construction related emissions, but it does recommend quantifying and disclosing construction generated GHG emissions.[27] The emissions associated with construction activities were quantified using the CalEEMod emissions model.[28] Appendix A (*Air Emissions Modeling Results*) provides detailed model input and output.

Table 3-6 summarizes estimated GHG emissions associated with construction and operation. As indicated, the total construction-related GHG emissions would be approximately 253 metric tons (MT) of carbon dioxide equivalents (CO_2e) over the approximate one-year construction period. This value represents the maximum absolute value rather than an amortized value over the anticipated life of the Proposed Project. The short-term increase in GHG emissions would account for 0.04 percent of the 2017 City-wide GHG emissions budget, a *de minimis* temporary increase and less-than-significant impact.

GHG emissions during the operations phase are expected to total 56.2 metric tons per year (MT/yr). As such, the total GHG emissions during the first year would total 309.2 MT/yr in the first year and 56.2 MT/yr afterward.

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[27] Bay Area Air Quality Management District. 2022. California Environmental Quality Act Air Quality Guidelines. Available at https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines

[28] California Air Pollution Officers Association (CAPCOA) in collaboration with the California Air Districts. California Emissions Estimator Model (CalEEMod) (Version 2022.1.1.21). Available at: https://www.aqmd.gov/caleemod/download-model

Table 3-6. Construction and operations-phase GHG emissions estimates

CATEGORY	GHG EMISSIONS (METRIC TONS PER YEAR OF CARBON DIOXIDE EQUIVALENT (MTCO2E)
Construction-phase	253
Operation-phase	56.2
TOTAL	**309.2**

This analysis indicates that neither the Proposed Project's construction nor operation phases are expected to produce direct or indirect GHG emissions at levels that would significantly impact the environment. Further, BAAQMD recommended project design elements related to the operation-phase are related to building construction or projects with a nexus to transportation, which does not apply to this Proposed Project.

Impact Designation: Less than Significant Impact

b) Conflict with GHG-related plans, policies or regulations: The City of San Leandro adopted a Climate Action Plan in 2021, which outlines the City's goal of reducing GHG emissions by 40% below 2005 levels by 2020 and 80% percent below 2005 levels by 2050.[29] According to the CAP, GHG emissions within the City have declined steadily from 720,990 $MTCO_2e$ in 2005 to 573,580 MTCO2e in 2017, a decrease of 20 percent. Transportation sources remain the largest source of GHG emissions, accounting for approximately 60 percent of the City's total GHG emissions budget.

The Climate Action Plan identifies 52 GHG reduction strategies under 12 categories. Of those, the most applicable GHG reduction key actions to this Project include:

> *WR-2 Construction and Demolition Waste*: Explore opportunities to exceed State requirements for construction and demolition materials by encouraging deconstruction and material reuse.

The Proposed Project involves the reuse of 26,000 cubic yards of stockpiled soil from previous capital improvement projects at the WPCP, which would have otherwise gone to landfill. Thus, the Proposed Project would not conflict with the adopted Climate Action Plan.

The Proposed Project is consistent with the Alameda County Community Climate Action Plan and does not conflict with the objectives of Assembly Bill 32 (AB 32), the Global Warming Solutions Act, or BAAQMD's 2017 Clean Air Plan.[30] AB 32 aims to reduce statewide GHG emissions to 1990 levels by 2020, and the 2017 CAP includes specific GHG measures for wastewater treatment plants, focusing on limiting GHG emissions and supporting water conservation. The Proposed Project's optimization of the WPCP will not significantly increase GHG emissions or affect recycled water production, thereby aligning with these measures. The Project's GHG emissions will not surpass BAAQMD's threshold of 1,100 metric tons per year CO2e, indicating that it will not contribute to a substantial increase in GHG

[29] City of San Leandro. 2021. San Leandro 2021 Climate Action Plan. Available at www.sanleandro.org

[30] Bay Area Air Quality Management District (BAAQMD), 2017ba. Bay Area 2017 Clean Air Plan adopted April 19, 2017. Available at http://www.baaqmd.gov.

emissions that could hinder California's efforts under AB 32. Therefore, the Project's impact on GHG emissions is assessed as less than significant.

Impact Designation: Less than Significant Impact.

Cumulative Impacts on Greenhouse Gas Emissions

Viewed from a climate change perspective, GHG impacts are inherently cumulative on a global scale. However, the Proposed Project is not anticipated to generate significant non-cumulative GHG emissions when assessed against regionally established significance thresholds. Therefore, it is not anticipated to contribute significantly to cumulative impacts from a climate change perspective.[31,32]

[31] California Air Pollution Officers Association (CAPCOA), 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. Available at https://opr.ca.gov/docs/june08-ceqa.pdf

[32] California Office of Planning and Research and California Air Resources Board. Slides from April 18, 2023, CEQA 202 Series: Greenhouse Gas Emissions. Available at https://www.opr.ca.gov/ceqa/docs/20230517-CEQA_202_GHGAnalysis_Slides.pdf

3.10. Hazards and Hazardous Materials

ISSUES: HAZARDS AND HAZARDOUS MATERIALS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
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 § 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?	☐	☐	☐	☒

Discussion

a) **Transport, Use, and Disposal of Hazardous Materials:** During construction of the Proposed Project, including grading and excavation and filling, hazardous materials like fuels, oils, lubricants, and solvents may be used in limited quantities during heavy equipment operation. Mishandling or improper disposal of these materials could lead to accidental releases, posing risks to workers, the public, and the environment, including soil and water sources. However, laws and regulations, such as those enforced by the California Occupational Safety and Health Administration (Cal/OSHA) and the Department of Transportation (DOT), oversee the transport, use, storage, handling, and disposal of hazardous materials, mitigating potential hazards.

The construction-phase SWPPP shall incorporate BMPs to regulate hazardous material use during construction, further controlling potential impacts. Examples include the deployment of spill response kits during all construction activities, the establishment of exclusion buffers to restrict access to sensitive habitats, and limiting all fueling, maintenance, and emergency response activities to within paved portions of the WPCP. Further, the amount of hazardous chemicals present during construction would be limited to what is required to operate construction equipment. The potential for the release of hazardous materials during construction is low, and even if a release were to occur, it would not result in a significant hazard to the public, surrounding land uses, or the environment due to the small quantities of these materials associated with construction vehicles.

Similarly, the operation and maintenance of the Proposed Project may involve handling small quantities of hazardous materials, such as lubricants, oils, and solvents, consistent with existing operations. Federal and state laws ensure worker safety by minimizing risks from physical and chemical hazards and mandating Hazardous Waste Operations and Emergency Response (HAZWOPER) training for relevant activities. Businesses using hazardous materials must submit Hazardous Materials Business Plans to local agencies for inspection, ensuring compliance with labeling, training, and storage regulations. Hazardous substances associated with the Proposed Project are typically limited in both amounts and use such that they can be contained without impacting the environment.

In addition, compliance with safety regulations and industry standards, including the California fire code and local building codes, minimizes hazards to the public and the environment. As an existing facility, updates to the Hazardous Materials Business Plan would reflect any changes resulting from the Proposed Project. Adherence to existing laws and regulations governing hazardous materials management ensures that the Project's impact remains less than significant.

<u>Impact Designation:</u> Less than Significant Impact

b) **Accidental Spills and Releases to the Environment:** This subsection addresses accidental spills and hazardous material conditions with respect to evaluating the exposure of people or the environment to adverse hazardous materials. Due to the industrial nature of the site and the immediate surroundings, as well as the Proposed Project location, with respect to OAK airport, considerations include the presence of pipelines, legacy contamination, and the routine risk of spills during the construction and operational phase of the Proposed Project.

Legacy Contamination and Reuse of Stockpiled Material

This section addresses concerns regarding historical contamination at the Project site and references Appendix G, which details a risk assessment for reusing stockpiled material in the Proposed Project. The Proposed Project involves mixing stockpiled soil into the existing retention basin, which is known to contain sludge from historical operations at the WPCP. This mixture will be cement-stabilized to create a more stable working surface. Available Information on the subsurface soils reveals that the pond's dike was built predominantly from clay fill of moderate to high plasticity, interspersed with silt. Original construction documents from the 1970s advise covering any exposed sand at the dike's base with a layer of compacted clay one foot thick. These dike-fill materials, spanning 9 to 16 feet in thickness, rest on top of layers of alluvial deposits and dense bay mud. The combined soil and sludge will then be topped with around 11,000 cubic yards of uncontaminated fill to elevate the basin by an additional foot. An impermeable liner will be placed over this clean fill to form the base of the non-vegetated section of the treatment wetland. To ensure a solid foundation and further eliminate exposure pathways to people and the environment, the soil/sludge mix will be solidified with cement.

Site-specific evaluations, detailed in Appendix G, found chemical concentrations in stockpiled soil and sludge found within the existing retention basin at levels above applicable screening levels, which warranted further review. Evaluations included identifying chemicals of concern and evaluating exposure pathways to people and wildlife through groundwater and soil, as described below.

During the construction phase, workers could be exposed to chemicals of concern during construction. Potential routes of exposure include incidental ingestion and dermal contact or inhalation of volatiles and airborne particulates. Appendix G shows that conservatively estimated cumulative cancer risk and noncancer hazards indicate construction worker exposure to chemicals of potential concern during the construction of the proposed treatment wetland does not pose an unacceptable risk to human health, based on criteria established by the CalEPA Department of Toxic Substances Control and the U.S. Environmental Protection Agency. All construction workers must be HAZWOPER trained and certified to mitigate residual risk to workers and reduce the potential for impacts associated with the accidental release of hazardous materials that are routinely used during construction activities.

During the operations phase, people and wildlife will have no exposure to chemicals of concern in the soil due to the combined consequences of cement stabilization, covering this stabilized soil with about one foot of clean fill and covering the entire basin with a thick impermeable liner. Leaching tests were performed on the stockpile-soil and recently collected sludge samples to inform the risk to ecological receptors from metals leaching to groundwater. These tests showed that the leachability of metals in stockpiled soil and sludge is extremely low, with extracted concentrations below or slightly above applicable screening levels for fresh-water and salt-water habitats. The leachability of chemicals of concern is determined to be highly unlikely, given the test results combined with the Project components listed above. Consistent with regulatory guidance and consultation with the RWQCB, based upon reasonably anticipated future use of the Project site, there will be no complete human or ecological exposure pathways to chemicals of concern following the Proposed Project's construction.

Fuel Pipeline Presence

Three pipelines owned by Shell and Kinder Morgan run parallel below the service road atop the perimeter dike to the south of the existing retention basin. One line is Shell’s inactive 8-inch fuel pipeline, while Kinder Morgan owns a 10-inch pipeline used for multi-product fuel and a 12-inch pipeline supplying jet fuel. These pipelines extend beyond the Proposed Project's eastern limit and run below the service road before turning southward into San Francisco Bay. As part of the design process, these pipelines were precisely mapped in coordination with the pipeline owners and will be depicted in all design drawings for the Proposed Project.

Trenching for the pipeline connecting the nitrification units will occur within the existing service road, approximately 10 feet from the pipelines. This activity carries the risk of inadvertent damage to the pipelines. The City has already engaged with Kinder Morgan to identify appropriate measures to relocate the locations of all pipelines and establish notification procedures and actions in the event of pipeline damage. Mitigation Measure HZ-1 will be implemented to address potential hazards during construction, necessitating pipeline location determination, avoidance, and shutdown protocols in case of potential ruptures. By implementing this mitigation measure, the Project aims to minimize the risk associated with operating near active pipelines and ensure the initiation of appropriate emergency actions if pipeline damage occurs.

Accidental Spills and Handling of Hazardous Materials

Project construction activities may necessitate the utilization of limited quantities of hazardous materials like fuels, oils, lubricants, and solvents. Improper handling, storage, transport, or disposal of these hazardous materials during construction could lead to accidental releases, posing risks to construction workers, the public, and the environment, including soil and surface water.

Existing laws and regulations govern the transport, use, storage, handling, and disposal of hazardous materials to mitigate potential hazards. California Occupational Safety and Health Administration (Cal/OSHA) sets workplace safety standards for handling and using hazardous materials. Transportation of hazardous materials falls under the jurisdiction of the federal and state DOT or Caltrans, which establish driver training requirements, load labeling procedures, and container specifications to minimize the risk of accidental release. Moreover, the construction-phase SWPPP will include BMPs to control the use, storage, and transport of hazardous materials during construction. Therefore, the transport, use, storage, handling, and disposal of hazardous materials for the Proposed Project would be adequately regulated through existing requirements, thereby minimizing potential impacts during construction.

Operation and maintenance of the Proposed Project may also involve the transport, use, storage, and disposal of small quantities of hazardous materials, like cleaners, fuels, lubricants, and hydraulic fluids, consistent with existing operations. Federal and state laws cover the handling of hazardous materials, minimizing worker safety risks from physical and chemical hazards in the workplace. Workers would receive HAZWOPER training as required for activities involving hazardous materials.

Compliance with existing safety regulations and widely accepted industry standards would also serve to lessen public and environmental hazards. Construction and operation of the Proposed Project would be mandated to adhere to the California fire code and local building codes. It is possible that substances that could be considered hazardous, including gasoline, lubricants, and solvents may be temporarily used and stored at the proposed nitrification facility used to support the treatment wetland. The City shall require the contractor to comply with the safety and environmental submittal requirements for contractors' submittals, consistent with current California regulatory requirements. The construction contract documents shall require that these materials be identified in an inventory, that current Material Safety Data Sheets be available on site, and that the hazardous materials be stored, labeled, and disposed of in accordance with applicable regulations. The contractor shall be held responsible for reporting any release of hazardous materials or other similar substances (in amounts above their reportable quantities). During the operations phase, the City will store and dispose of petroleum-based products and all flammable liquids in accordance with applicable laws and regulations.

<u>Impact Designation:</u> Less than Significant Impact with Mitigation Incorporated

Mitigation Measure HZ-1 – Active Fuel Pipelines Hazards: Prior to commencing construction activities, the exact positions of the three fuel lines must be accurately marked and confirmed in consultation with Kinder Morgan, in accordance with their Developer Handbook.[33] Project plans must be provided to Kinder Morgan at least six weeks before construction commencement to allow for the receipt of an approval letter, which may contain specific procedures to be followed. Additionally, before any excavation occurs near the pipeline, the City or its contractor must notify 811 at least three days before the excavation.

Excavation or ground disturbance in proximity to active pipelines requires the implementation of protocols for informing the owners/operators in the event of an accidental rupture, followed by the implementation of shutdown procedures. In line with the Developer Handbook, the City will promptly notify Kinder Morgan's Operations Supervisor or Area Manager if damage occurs to a pipeline. If the damage results in releasing any flammable, toxic, or corrosive substance that poses a risk to life or property, the City will immediately contact 911. Moreover, if the damage affects a pipeline not owned by Kinder Morgan, the owner or operator of that pipeline must also be notified.

c) **Within One-Quarter Mile of Schools:** No existing or planned elementary, middle, intermediate, or high schools are within 0.25 miles of the Project site. The nearest school facility is Garfield Elementary School, approximately 0.95 miles southeast of the Project site. As discussed above, the Proposed Project does not anticipate releasing hazardous emissions or handling acutely hazardous materials, substances, or wastes in significant quantities. Construction activities associated with the Proposed Project would use a limited amount of hazardous and flammable substances/oils during heavy equipment operation for site excavation, grading, and construction. The amount of hazardous chemicals present during construction would be limited and would be in compliance with existing government regulations.

During operation, the Proposed Project site would not require the use, storage, disposal, or transport of large volumes of hazardous materials that could cause severe environmental damage in the event of an accident. Although hazardous substances would be present and utilized in limited amounts within the Project site, they would typically be present in small quantities and can be cleaned up without affecting the environment. In addition, the Project site is not within 0.25 mile of any schools. Therefore, there would be no impact on potential exposure of hazardous emissions or acutely hazardous materials, substances, or wastes within one-quarter mile of a school.

Impact Designation: Less than Significant Impact

d) **Hazardous Materials Sites According to Government Code Section 65962.5:** While there are several release sites listed near the Project area, and some are included in the "Cortese" list as per Government Code Section 65962.5, the Project site itself is not on this list.[34] Therefore, the Proposed Project would have less-than-significant impacts associated with lists of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Impact Designation: No impact

[33] Kinder Morgan. 2021. Developer Handbook: Guidance for Working Near or Adjacent to a Pipeline. Available at https://www.kindermorgan.com/WWWKM/media/Documents/Public%20Awareness/KM_Developer_Handbook.pdf

[34] Information Required From the State Water Resources Control Board (SWRCB) Under Government Code Section 65962.5(c). Accessed on February 9, 2024. Available at https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5c/

e) **Oakland International Airport Land Use Compatibility Plan:** OAK airport property borders the Proposed Project site and lies within the airport influence area (AIA), defined in the OAK Airport Land Use Compatibility Plan.[35] This area encompasses zones where airport-related factors may significantly impact land uses, subjecting projects to review by the Alameda County Land Use Commission. The OAK Compatibility Plan, aligned with San Leandro's General Plan, guides off-airport land use compatibility decisions based on the OAK Master Plan.

The Proposed Project site primarily falls within Safety Compatibility Zone 6 (Traffic Pattern Zone) in the OAK Compatibility Plan, with a small segment in Zone 3 (Inner Turning Zone). Safety Compatibility Zones inform land use decisions within the AIA. The Proposed Project is most associated with Open Space and Water Treatment land uses, as defined in Table 3-2 of the OAK Land Use Compatibility Plan. Open spaces and water treatment uses pose a potential wildlife attractant that could pose a hazard to aircraft and require mitigation to prevent the attraction of wildlife hazards. Federal Aviation Administration (FAA) and U.S. Department of Agriculture (USDA) guidelines recommend consultations with airport biologists to mitigate this risk.[36]

City staff engaged with OAK and USDA personnel to address compatibility concerns and met with wildlife biologists on-site to discuss wildlife attraction issues and suitable mitigation measures focused on vegetation management. The City has historically managed the vegetation at the Proposed Project Site to minimize wildlife attraction and reduce mosquito risk. In addition to consulting with USDA, the City is in routine contact with Alameda County Mosquito Abatement District. The planting plan for the Project has been designed to maximize the use of low-growing vegetation that can be periodically removed by mechanical and manual means.

Throughout the operations phase, it is possible that unmanaged vegetation near open water could prompt the need for management actions to reduce the risk to public health posed by mosquitos. Similarly, overgrown and dense vegetation can form into bird habitat, which could pose a wildlife hazard risk to OAK. Mitigation Measure HZ-2 aims to minimize mosquito and wildlife attraction risks, incorporating strategies for vegetation management and water treatment efficiency, including mowing, removal of nuisance vegetation of invasive plants, and coordination with the Alameda County Mosquito Abatement District to stock the open water portion of the wetland with mosquitofish (*Gambusia affinis*) or other suitable management strategies. Additionally, dust control measures, mandated by Mitigation Measure AQ-1, mitigate potential dust emissions during construction, ensuring the Project construction activities do not interfere with pilot visibility or create turbulence.

<u>Impact Designation:</u> Less than Significant Impact with Mitigation Incorporated

Mitigation Measure HZ-2: Vegetation Management:
Maintenance activities will be outlined in a Vegetation Management Plan, which must be developed prior to construction. These activities will encompass periodic draining, which may temporarily halt treatment activities in the treatment wetland to address the establishment of aquatic weeds and

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[35] Alameda County Community Development Agency, Planning Department. 2010. Oakland International Airport Land Use Compatibility Plan. Available at https://www.acgov.org/cda/planning/generalplans/airportlandplans.htm

[36] Federal Aviation Administration. 2020. *Advisory Circular 150/5200-33B - Hazardous Wildlife Attractants On or Near Airports*. Available at www.faa.gov

manage vegetation. The Project site will be subject to routine inspections by the Alameda County Mosquito Abatement District and USDA Wildlife Biologists. In the event of nuisance vegetation, mosquito populations, or wildlife hazards, adaptive management strategies will be employed in consultation with these agencies. Potential management actions may include vegetation management or removal, periodic draining of the open water portion of the Project, stocking of mosquitofish, or other controls recommended or mandated by the Alameda County Mosquito Abatement District or USDA.

f) **Interference with Emergency Plans:** The Proposed Project would not result in any changes in the long-term operations of the WPCP, ensuring no changes in the workforce size. Consequently, it would not impede emergency evacuation procedures. As discussed in Section 3.18 (Transportation), construction-related traffic would be confined to the construction phase and would not hinder emergency vehicles. Temporary increases in traffic during construction are anticipated to be less than significant. Furthermore, construction activities would be confined to WPCP premises, avoiding any disruption to public roadways. Thus, the Proposed Project would not impair the implementation of, or physically interfere with, an adopted emergency response or evacuation plan.

Impact Designation: No impact

g) **Wildfires:** Implementation of the Proposed Project is not expected to increase the exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. As discussed in Section 3.21 (Wildfires), Very High Fire Hazard Severity Zones in San Leandro are located east of I-580 in the East Bay Hills, approximately 3.25 miles from the Proposed Project site. The Project site is located within an urbanized industrial area of San Leandro and is surrounded by urban development. The Project site is not within a state responsibility area or near a high fire hazard severity zone.

Impact Designation: No impact

Cumulative Impacts on Hazards and Hazardous Materials

Hazards associated with the Proposed Project are typically site-specific and do not usually result in cumulative effects. However, construction sites often involve the use of hazardous materials, which could pose significant risks to the public or the environment, particularly in the event of accidents or contamination spreading to larger areas. Handling contaminated soil during construction also requires adherence to HAZWOPER training and implementation to minimize worker impacts and ensure environmental safety. Furthermore, construction activities near active fuel pipelines could present significant hazards due to the potential release of hazardous materials into the environment.

When considering the Proposed Project along with past, present, and foreseeable projects, there is a possibility of significant cumulative impacts related to hazards and hazardous materials. The handling of hazardous materials during construction could contribute cumulatively to significant impacts. However, compliance with applicable federal, state, and local regulations, along with the implementation of Mitigation Measures HZ-1 and HZ-2, would substantially mitigate these impacts and those related to wildlife hazards to OAK.

The most significant cumulative projects in close vicinity are the future Monarch Bay Shoreline Development Project, located approximately 1.2 miles south, and the ongoing implementation of the Oyster Bay Regional

Shoreline Land Use Plan Amendment, situated immediately south of the Proposed Project. The latter project involves ongoing maintenance activities and movement of clean soil.

Due to the localized and temporary nature of Project activities, stringent regulatory requirements, and the commitment to implementing mitigation measures, the likelihood of spills and accidents would be minimized. The distance between the Project site and the nearest ongoing or foreseeable project ensures that people and the environment would not be exposed to hazards significantly higher than those predicted under the Proposed Project. Therefore, the risk of hazards and hazardous materials generated by the Proposed Project, in conjunction with nearby cumulative projects, would result in a less-than-significant impact.

3.11. Hydrology and Water Quality

ISSUES: HYDROLOGY AND WATER QUALITY	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☐	☒
i. result in a 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 existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☒
iv. impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Discussion

a) **Violate water quality standards:** The Project site, situated in the San Francisco Bay basin within the South Bay Basin watershed, necessitates construction activities such as excavation and grading, which may dislodge soil particles. If not managed properly, these soil particles could be washed into receiving waters, potentially causing sedimentation and impacting water quality. Consequently, the Project requires coverage under the Statewide Construction General Stormwater Permit.[37] This entails

[37] California State Water Resources Control Board. 2022. *National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities*. Order WQ 2022-0057-DWQ NPDES No. CAS000002.

the preparation of a SWPPP and the implementation of site-specific BMPs to mitigate erosion, sedimentation, and the release of hazardous materials.

The SWPPP, prepared by a Qualified SWPPP Preparer and overseen by a Qualified SWPPP Practitioner, includes various elements such as good site management practices, erosion controls, sediment controls, and periodic site BMP inspection, maintenance, and repairs. These measures are designed to identify pollutant sources, reduce pollutants in stormwater discharges, and prevent non-stormwater discharges from reaching surface water or municipal drainage systems.

Furthermore, the Project will operate in compliance with NPDES Permit No. CA0038881 and Title 22 requirements for irrigation of secondary treated effluent. In 2022, the RWQCB issued this NPDES Permit for the treatment wetland facility and discharges through the existing outfall to San Francisco Bay. This permit application was supported by a modeling study, site surveys, and subject to thorough review and public comment. The Proposed Project aims to nitrify secondary treated effluent from the WPCP and direct up to 0.95 mgd to seepage slopes along the edges of the existing basin featuring woodchip-containing crates planted with native vegetation designed to promote nitrogen removal and reduce nutrient loading to San Francisco Bay from the WPCP. Treated wastewater will be polished through the slopes and flow into the open water portion of the basin for additional removal of nutrients and organic pollutants. This novel approach will inform other nature-based solutions for nutrient management in the region and elsewhere.

The subgrade of the internal basin will undergo a process of cement mixing and compaction to achieve a dry density of 90%, enhancing impermeability. An approximate volume of 11,000 cubic feet of clean fill will then be layered over the stabilized base. Additionally, an impermeable plastic liner will be installed to completely cover the base of the basin and extend up the side slopes beneath the woodchip bioreactor. This comprehensive sealing approach aims to eliminate pollution pathways to groundwater and soil, while also raising the surface elevation by approximately 6 feet.

The basin is anticipated to reach a maximum depth of 18-24 inches when filled, resulting in minimal hydrostatic pressure on the liner and underlying basin. The polished effluent will be discharged into San Francisco Bay via the existing flow control structure located at the southwest corner of the 6.9-acre basin. The control structure will feature a new tide gate to prevent saltwater from entering the pond during extreme tides. Routine water quality testing will occur for reporting to the RWQCB in compliance with its NPDES permit. Water quality testing will be conducted in collaboration with regional researchers to assess the effectiveness of nutrient removal and other associated benefits.

In conclusion, the implementation of the proposed advanced treatment facilities, SWPPP requirements, NPDES permit requirements, and design features outlined in the Project Description will effectively mitigate potential impacts on water quality, ensuring compliance with regulatory standards and minimizing environmental harm. Therefore, the Project's impact on surface water quality is expected to be less than significant.

Impact Designation: Less than Significant Impact.

b) **Impact groundwater supplies:** The subgrade of the internal basin will be cement stabilized, compacted, covered with one foot of fill, and coated with an impermeable liner to maximize treatment effectiveness and minimize surface water to groundwater interactions. Underlying groundwater resources are not utilized for water supply and thus, the Proposed Project will not impede sustainable groundwater management of a groundwater basin.

Impact Designation: No Impact

c) **Alter existing drainage patterns (i-iv):** The Proposed Project is not anticipated to have a significant impact on stormwater volumes or flood risk potential. There will be no creation of new impervious surfaces or changes to existing drainage channels. The open water section of the Project will continue to capture rainfall within its barrier embankment during storm events. Additionally, the modular nitrification units will be installed on existing impervious surfaces and will not contribute to increased runoff or changes in drainage patterns. During the construction phase, a SWPPP will be implemented to control erosion, followed by the restoration of disturbed soils through planting and revegetation. Consequently, the Project is not expected to result in elevated erosion, sedimentation, or flooding either on-site or off-site, and it will not degrade water quality.

Impact Designation: No Impact

d) **Flood-induced pollution:** The Project site, situated along the Bay shoreline, faces potential vulnerability to seiche waves, although historical records indicate no occurrences within the Bay. Tsunami waves, however, have been observed, often originating from distant sources like Asia, Alaska, or South America. Despite this, as the Proposed Project does not include habitable structures, any damage from a tsunami would likely result in minimal impacts on people. In the event of levee overtopping along the southern perimeter of the basin, there may be discharge of co-mingled polished effluent and seawater, albeit with pollutants at minimal levels.

Furthermore, the implementation of the Proposed Project will increase the basin's height by approximately six feet, with a new tide gate installed to mitigate against seawater intrusion and potential sea level rise. These measures aim to prevent adverse impacts on the surrounding topography and reduce the risk of loss, injury, or death in the event of a seiche and/or tsunami. Additionally, the relatively flat terrain of the surrounding area and the absence of nearby sources of mudflow mean that the Project would not be susceptible to mudflows.

Impact Designation: Less than Significant Impact.

e) **Conflict with water quality plans:** To ensure ongoing adherence to the San Francisco Bay Water Quality Control Plan (Basin Plan), the Proposed Project will operate in accordance with NPDES Permit No. CA0038881. The Proposed Project site is not subject to a groundwater management plan.

Impact Designation: No Impact

Cumulative Impacts on Hydrology and Water Quality

Simultaneous construction activities of the Proposed Project and other projects in the surrounding area may increase erosion of exposed soils and subsequent sedimentation, potentially impacting water quality in receiving waters. Additionally, accidental releases of fuels or hazardous materials during construction could affect water quality in stream channels or storm drains flowing into San Francisco Bay. However, measures are in place to manage all waters encountered or utilized during construction through the implementation of a construction-phase SWPPP, addressing dewatering, stormwater, and dust control.

Furthermore, the operation of the Project itself does not involve significant land use changes within the watershed compared to current conditions at the site and its surroundings. The Project site is currently paved with impervious surfaces, and storm runoff generated on-site would follow existing patterns. Stormwater runoff will continue to be managed similarly to current practices.

During the operations phase, polished wastewater will be managed in accordance with the NPDES permit specifically issued for this project, which considers cumulative effects on water quality and includes specific discharge limits for pollutants and constituents. Compliance with these permit requirements helps mitigate potential cumulative impacts associated with stormwater runoff and water quality during both construction and operations phases. This project is anticipated to reduce nitrogen loading to San Francisco Bay, which will serve to reduce the cumulative impacts of nutrient enrichment in San Francisco Bay.

While other projects in the area may also affect water quality, the cumulative impact of the Proposed Project, when combined with these projects, would not be significant given its adherence to existing regulations.

3.12. Land Use and Planning

ISSUES: LAND USE AND PLANNING	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
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?	☐	☐	☐	☒

Discussion

f) **Divide an established community.** As noted above, the Project site is located at the Western end of Davis street, in a heavily industrialized portion of San Leandro, CA, near the border with Oakland, CA. Surrounding land uses consist of other public and Industrial uses, including adjacent properties developed as the WPCP, a waste transfer facility, shooting range, the Oakland Airport, and Oyster Bay Recreational Shoreline. The project would not result in the direct or indirect physical division of an established community. No impact is expected.

Impact Designation: No impact

g) **Conflicts with land use plans.** The City of San Leandro General Plan (2016) governs land use at the Project site, designating it for Public/Institutional purposes with an Industrial General (IG) zoning classification.[38,39] The Public/Institutional category falls within the broader Public/Open Space category, encompassing various uses such as public schools, libraries, post offices, churches, public hospitals, other public or institutional buildings, recreational facilities, and preserved lands or walking trails.[40] The Proposed Project is in line with the existing land use designations, zoning, and current site uses.

The project's design adheres to key environmental plans and policies regulating wastewater treatment. These include RWQCB NPDES Permits, the San Francisco Basin Plan and Antidegradation Policy, BAAQMD guidelines, and BCDC policies, as detailed in the relevant analysis sections.

Due to its location within the 100-ft shoreline band of San Francisco Bay, the site falls under BCDC's jurisdiction. The existing facility operates with a permit from BCDC, whose staff have been consulted

[38] City of San Leandro. Official General Plan Land Use Map of the City of San Leandro, adopted by the City Council on December 7, 2020, under Resolution 2020-149. Available at www.sanleandro.org

[39] City of San Leandro. Zoning for the City of San Leandro, Effective 1/18/2023, Adopted by the City Council on 12/19/2022 under Ordinance 2022-022. Available at www.sanleandro.org/345/Zoning-Code-Zoning-Map

[40] City of San Leandro. 2016. San Leandro 2035 General Plan, Chapter 3: Land Use. Available at https://www.sanleandro.org/332/General-Plan

for this project. Pending the City Council's certification of CEQA documentation, the City plans to request an Administrative Amendment to its existing permit.

Impact Designation: No impact

Cumulative Impacts on Land Use and Planning

The potential for cumulative impacts on land use is confined to the area encompassing the WPCP and its adjacent regions. Given that the Project itself is not anticipated to have any impact on land use, it would not contribute to any broader cumulative impacts on land use and planning in this area.

3.13. Mineral Resources

ISSUES: MINERAL RESOURCES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be a 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?	☐	☐	☐	☒

Discussion

a,b) Impacts to mineral resources. The Proposed Project site is situated in an area classified as MRZ-1, where no significant mineral deposits are known to exist.[41] Additionally, the site does not host any mines, mineral processing plants, or oil, gas, or geothermal wells.[42]

San Leandro's General Plan notes that the city's primary mineral resources are volcanic rocks, such as basalt, andesite, and rhyolite. Rhyolite from the East Bay Hills has been a key material in construction and development projects for over a century. The city's only quarry, located east of the city limits on Lake Chabot Road, ceased operations in the 1980s. Operational since 1886, this quarry produced aggregate and fill material for numerous construction projects across the East Bay. While additional rock resources remain at the site, future quarrying is unlikely due to potential environmental impacts and the challenges of obtaining permits.[43]

Local land use plans do not recognize any locally important mineral resources at the Project site. The Proposed Project does not include any mining activities. As such, the construction or operation of the Project will not impact, destroy, or restrict access to any significant existing mineral resources.

Impact Designation: No impact

Cumulative Impacts on Mineral Resources

Since the Project is not expected to impact mineral resources, it consequently would not contribute to any cumulative impacts in this regard.

[41] California Department of Conservation, Division of Mines and Geology. 1987. Mineral Land Classification: Aggregate Materials in the San Francisco-Monterey Bay Area, Special Report 146, Part II, Plate 2.23. Available online at https://ia804701.us.archive.org/33/items/minerallandclass00stin/minerallandclass00stin.pdf Accessed November 22, 2023.

[42] Geologic Energy Management Division (CalGEM). Well Finder. Available at https://www.conservation.ca.gov/calgem/Pages/Wellfinder.aspx Accessed on November 22, 2023.

[43] City of San Leandro. 2016. San Leandro 2035 General Plan, Chapter 6: Open Space, Parks, and Conservation. Available at https://www.sanleandro.org/332/General-Plan

3.14. Noise

ISSUES: NOISE	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

a) **Generate significant noise.** Chapter 4-1 of the City's Municipal Code provides restrictions and regulations for noise within San Leandro. The noise-related code does not contain numerical noise level limits and is aimed more at prohibiting "disturbing, excessive and offensive noises" so as to abate public nuisances relative to noise.[44] Beyond this basic framework, the following regulations are provided in the City's Municipal Code which addresses the prohibition of construction and stationary operational noise:

> *<u>Construction-related Noise Near Residential Uses.</u> Construction work or related activity which is adjacent to or across a street or right of way from a residential use, except between the hours of 7 a.m. and 7 p.m. on weekdays, or between 8 a.m. and 7 p.m. on Sunday and Saturday. No such construction is permitted on Federal holidays. As used in this Article, "construction" shall mean any site preparation, assembly, erection, substantial repair, alteration, demolition or similar action, for or on any private property, public or private right-of-way, streets, structures, utilities, facilities, or other similar property. Construction activities carried on in violation of this Article may be enforced as provided in Section 4-11-1130, and may also be enforced by issuance of a stop work order and/or revocation of any or all permits issued for such construction activity.*

> *<u>Conflicts with Residential Uses</u>. Subject to the restrictions on constructions contained in subdivision (b), the sustained operation or use between the hours of 9 p.m. and 8 a.m. of any electric or gasoline powered motor or engine or the repair, modification, reconstruction, testing or operation of any automobile, motorcycle, sweeper, vacuum, public address system, whistle*

[44] City of San Leandro. 2016. San Leandro General Plan Update Draft EIR, Chapter 4-10, Noise. Available at https://www.sanleandro.org/332/General-Plan

muffler, motorized scooter, machine or mechanical device or other contrivance or facility unless such motor, engine, automobile, motorcycle, sweeper, vacuum, public address system, whistle muffler, motorized scooter, machine or mechanical device is enclosed within a sound insulated structure so as to prevent noise and sound from being plainly audible from any residential property line.

Loud Music in Parks. The use of electronic equipment, including but not limited to amplifiers, radio loudspeakers, phonographs, tape amplifiers, electronically operated or acoustic musical instruments or other device of like design used for producing sound in or upon any public street, park or grounds, or any other open area to which the public has access, whether publicly or privately owned, between the hours of 10 p.m. and 9 a.m. is unlawful. At any other time of day, such equipment may not be used in a manner which disturbs the peace, quiet and comfort of neighboring residents or persons of normal sensitivity who are using such areas.

Construction of the Proposed Project will lead to variable noise levels, influenced by the specific types, numbers, and usage duration of various construction equipment. This temporary construction will elevate noise levels in the vicinity of the Project, which is adjacent to a shooting range and industrial park already characterized by a variety of noise sources, including heavy equipment operation, vehicular traffic, and industrial processes. The expected equipment for this project includes a dump truck, front end loader, dump truck, bulldozer, roller, skid steer, water truck, and handheld tools. Table 3-7 presents the typical noise levels for comparable pieces of heavy equipment. Under a worst-case scenario, where all equipment is operational simultaneously at one location, the noise level could reach approximately 91 A-weighted decibels (dBA).

Table 3-7. Typical Construction Equipment Noise Emission Levels[45]

CONSTRUCTION EQUIPMENT	NOISE LEVEL (DBA, L_{EQ} AT 50 FEET)
Loader	85
Bulldozer	85
Roller	74
Truck	88
Combined Noise Level	**91**

Noise sensitive land uses include residential, mobile home parks, motels and hotels, schools, libraries, churches, hospitals, and nursing and convalescent homes. There are no noise sensitive land uses in the vicinity of the Project site. The nearest noise sensitive land use is a residential community located over 1,300 yards southeast of the Proposed Project site.

Assuming a worst-case construction noise level of 91 dBA at 50 feet, the attenuated maximum construction noise at a distance of 1,600 feet would be approximately 53 dBA. As stated above, existing industries in the vicinity of the Proposed Project currently generate noise at a similar or above decibels range than that proposed during construction. Therefore, noise generated during construction of the Proposed Project would not be out of character for the area and would be below ambient

[45] Federal Transit Administration, Office of Planning and Environment. 2006. Transit Noice and Vibration Impact Assessment (FTA-VA-90-1003-06). Available at www.transit.dot.gov

conditions. Therefore, given the existing background noise levels in the area and the estimated attenuated construction noise level at the nearest residences, construction noise associated with the Project would not exceed the City's noise policies, and this impact would be less than significant.

Following construction, the only permanent noise source that would be associated with the Project would be pumps to and from the nitrification system, which would generate insignificant noise at levels below ambient conditions at the closest residences. Therefore, long-term operation noise associated with the Project would not exceed the City's noise policies, and this impact would be less than significant.

Impact Designation: Less than Significant Impact.

b) **Generate excessive vibration or ground borne vibration.** Vibration impacts from construction activities primarily occur as a result of large or impact equipment. The Proposed Project would not include blasting, drilling, or other activities typically associated with ground borne vibration or ground borne noise. Construction of the Proposed Project will result in a very minor increase in ground borne vibration or ground borne noise levels during specific activities, such as soil movement and placement within the Basin, and temporary vehicular access along Davis Street and within the WPCP. The temporary increase in ground borne vibration and noise levels associated with these periodic occurrences are not expected to be excessive, will be temporary in nature, and will cease upon completion of construction.

Impact Designation: Less than Significant Impact.

c) **Noise impacts to airports.** OAK airport is located immediately north of the Proposed Project site. Implementation of the Proposed Project will not change the exposure of staff at the WPCP to additional airport-related noise and is not expected to expose people residing or working in the Proposed Project area to excessive noise levels.

Impact Designation: No Impact.

Cumulative Impacts on Noise

The WPCP is located in an area of San Leandro dominated by various industrial land uses and several streets in the Project vicinity are designated truck routes in the San Leandro General Plan.[46] In support of the Oyster Bay Regional Shoreline Land Use Plan Amendment, EBRPD commissioned a noise study in 2013 to perform baseline monitoring and inform potential impacts associated with improvements to the Oyster Bay Regional Shoreline.[47] Baseline measurements were collected near the Proposed Project and are believed to remain generally consistent under existing conditions. Along the designated truck routes near the Proposed Project, noise can range between 65-80 DNL (day-night average noise level).[48] Waste Management and the San

[46] City of San Leandro. 2016. San Leandro 2035 General Plan, Chapter 4: Transportation. Available at https://www.sanleandro.org/332/General-Plan

[47] SCA Environmental, Inc. Noise Impact Assessment – East Bay Regional Park District – Oyster Bay Regional Park – San Leandro, CA. September 16, 2013.

[48] East Bay Regional Park District. 2013. Initial Study and Mitigated Negative Declaration for the Oyster Bay Regional Shoreline Land Use Plan Amendment.

Leandro Gun Club are located adjacent to the proposed Davis Street access. OAK is located approximately one-half mile to the north, and many other industrial and commercial businesses are located in the immediate vicinity. A jet flyover at 1,000 feet has an average noise level of 100 dBA.[49]

The Proposed Project's impact on the noise and vibration environment would be localized within an existing industrial area characterized by moderately high baseline noise levels. For the Proposed Project to contribute to cumulative construction noise impacting sensitive receptors, another nearby project would need to be under construction simultaneously. However, there are no foreseeable development projects near the Proposed Project site currently in planning stages that could be constructed and operational in the near future.

The most significant cumulative projects in close vicinity are the future Monarch Bay Shoreline Development Project, located approximately 1.2 miles south, and the ongoing implementation of the Oyster Bay Regional Shoreline Land Use Plan Amendment, situated immediately south of the Proposed Project. The latter project involves on-going maintenance and soil movement that does not generate significant noise levels.

Construction and operation of the Proposed Project would not expose residents to noise levels violating applicable codes or policies, nor would it lead to an increase in ambient noise levels. The distance between the Project site and the nearest cumulative project ensures that the combined effect would not expose nearby offsite sensitive receptors to higher construction and operation noise levels already predicted under the Proposed Project. Therefore, the noise generated by the Proposed Project, in conjunction with nearby cumulative projects, would result in a less-than-significant impact.

[49] City of San Leandro. 2016. San Leandro General Plan Update Draft EIR, Chapter 4-10, Noise. Available at https://www.sanleandro.org/332/General-Plan

3.15. Population and Housing

ISSUES: POPULATION AND HOUSING	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

Industrial and commercial land uses surround the WPCP. The nearest residential communities, known as Little Alaska, Mulford Gardens, and Marina Faire, are located approximately 0.7 miles southeast of the existing entrance to the WPCP.

a) **Growth inducing:** The Proposed Project will not lead to any operational changes that could expand the treatment capacity of the WPCP or stimulate population growth in the area, and therefore, it is not expected to have any impact in this regard.

Impact Designation: No Impact.

b) **Population displacement:** The Proposed Project will not result in the displacement of people or existing housing units, nor will it require the construction of replacement housing. Consequently, it is not expected to have any impact.

Impact Designation: No Impact

Cumulative Impacts

The surrounding community of San Leandro and its vicinity are the focal points for potential cumulative impacts on population and housing due to the Proposed Project. These impacts are primarily linked to the potential short-term influx of construction workers necessitated by the Project. This influx may overlap with similar needs from other ongoing projects in the area. Such concurrent construction activities across multiple projects could theoretically stimulate some population growth in the southern Bay Area. However, the likelihood of a substantial number of construction workers relocating temporarily for these projects is low, considering the ample construction workforce available within a reasonable commuting distance to San Leandro. Consequently, the combined construction activities of this project and others nearby are unlikely to drive significant population growth or have a notable cumulative impact on housing.

3.16. Public Services

ISSUES: PUBLIC SERVICES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:	☐	☐	☐	☒
i. Fire Protection?	☐	☐	☐	☒
ii. Police Protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
vi. Parks?	☐	☐	☐	☒
iv. Other public facilities?	☐	☐	☐	☒

Discussion

a.i and ii.) Fire and Police Protection: Fire protection and police services are provided to the WPCP by Alameda County Fire and the City's police department, respectively. Alameda County Fire Department Station 10 is located at 2194 Williams Street in San Leandro, approximately 0.8 miles southeast of the WPCP entrance. This fire station houses an engine company and responds to portions of Highways 880 and 238, along with a residential and commercial area of approximately 2.75 square miles.

Relevant policies from San Leandro's 2035 General Plan include, with respect to levels of service from the police and fire departments:[50]

Policy CSF-1.1 Levels of Service. Maintain high-quality police and fire protection services through the most efficient and effective possible means. The following minimum level of service standards for police and fire response time (exclusive of dispatch time) shall be maintained:

a. Police Services: 5 minute response time for 90 percent of all Priority One calls;

[50] City of San Leandro 2035 General Plan, adopted by City Council in 2016 with subsequent amendments. Chapter 9, Community Services and Facilities Element. Available at https://www.sanleandro.org/332/General-Plan

b. *Fire Services: 5 minute response time for first due company for 90 percent of all emergency incidents, excluding freeway responses (3 firefighters including at least one paramedic); 10 minute response time for 90 percent for a full first alarm assignment response (17 firefighters).*

The potential for wildland fires associated with the Proposed Project and increased public use is not expected to increase significantly. In fact, fire risk will likely be lower due to the Project's operation and maintenance. The existing wastewater retention basin is primarily surrounded by shrubs and non-native grasses, which are periodically mowed. With construction of the Proposed Project, slopes shall be irrigated and the presence of dry vegetation during the summer and fall is anticipated to be lower.

Standard construction specifications include provisions for proper maintenance and use of construction equipment, some of which are included to prevent fires associated with construction activities. The Proposed Project will not alter the ability of fire department vehicles to access the area.

The City will continue to patrol the WPCP and surrounding area utilizing existing resources. The Proposed Project will not result in an adverse change in service ratios, response times, or other performance objectives associated with police protection.

<u>Impact Designation:</u> No Impact

a.iii) Schools: The closest school to the WPCP is Garfield Elementary School, located approximately 0.85 miles southeast of the WPCP entrance. The WPCP and Proposed Project site is located adjacent to the Bay Trail to the west, Oyster Bay Regional Shoreline, an EBRPD facility to the south, and Metropolitan Golf Links to the north.

The Proposed Project will not result in negative impacts to schools. Rather, the opportunity to tour the facility could represent a benefit to local schools by providing increased opportunities for ecological and engineering educational programs.

<u>Impact Designation:</u> No Impact

a.vi) Parks: The Proposed Project will not negatively impact parks, including Oyster Bay Regional Shoreline. In fact, the Proposed Project will yield positive effects by enhancing aesthetics, improving habitat, and offering opportunities to tour the facility and receive interpretive programming.

<u>Impact Designation:</u> No Impact

a.v) Other public facilities: Implementation of the Proposed Project will not adversely affect other public facilities.

<u>Impact Designation:</u> No Impact

Cumulative Impacts on Public Services

The geographic scope of cumulative impacts to public services is comprised of the service areas of the fire, police, and parks departments and other public facilities that serve the WPCP or the surrounding area. However, the Proposed Project would not include or result in the need for additional public facilities, and thus the Project would not contribute to any cumulative impact on these services.

3.17. Recreation

ISSUES: RECREATION	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

Oyster Bay Regional Shoreline is separated from the Proposed Project site by the tidal slough to the south. Along the western side of the Proposed Project site runs the Bay Trail, which provides a connection between San Leandro and Oakland via a trail bridge completed in 2010.[51] To the north of the WPCP lies the Metropolitan Golf Links. The closest public park and recreational facility is Cherry Grove Park, located about 1.15 miles east of the WPCP entrance.

a) **Increased use of public parks:** The Proposed Project is designed in such a way that it will not interfere with access to nearby recreational spaces, nor will it lead to an increase in usage of the existing local and regional parks located near the Project area.

The Proposed Project is anticipated to enhance the Bay Trail through enhanced aesthetics and signage, while educating users on the local ecology and cultural resources, and the purpose and objectives of the treatment wetland. Thus, the Proposed Project will not conflict with Relevant policies from San Leandro's 2035 General Plan and will have no adverse impact on the use of existing parks and recreational facilities.[52,53]

Impact Designation: No Impact

b) **Construction or expansion of recreational facilities:** The Proposed Project does not encompass any residential development, thereby eliminating the possibility of directly increasing the use of existing recreational facilities in the vicinity. Additionally, it will not necessitate the expansion or construction of

[51] City of San Leandro 2035 General Plan, adopted by City Council in 2016 with subsequent amendments. Chapter 6, Open Space, Parks, and Conservation. Available at https://www.sanleandro.org/332/General-Plan

[52] City of San Leandro 2035 General Plan, adopted by City Council in 2016 with subsequent amendments. Chapter 6, Open Space, Parks, and Conservation. Available at https://www.sanleandro.org/332/General-Plan

[53] Policy OSC-3.3 of the San Leandro 2035 General Plan: Bay and Ridge Trails. Support the development and improvement of a regional trail system in and around San Leandro, including the Bay Trail and the Ridge Trail. Work with EBRPD to improve access from San Leandro neighborhoods to these trails by improving existing trails, and developing new spur trails, bike lanes, and signage.

new recreational facilities, nor will it cause any alteration or deterioration of existing facilities. Consequently, no impact on recreational facilities is anticipated.

Impact Designation: No Impact

Cumulative Impacts on Recreation

The scope of potential cumulative impacts on recreation facilities encompasses all projects that could potentially increase usage of the same recreational facilities impacted by the Proposed Project. However, since the Project neither impacts existing recreational facilities nor proposes new or expanded ones, it would not contribute to any cumulative impacts on recreational facilities.

3.18. Transportation

ISSUES: TRANSPORTATION	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☐	☒

Discussion

a) **Conflict with transit or mobility policy:** The Proposed Project site is located along the shoreline of San Francisco Bay, accessible via Davis Street (SR 112) in San Leandro from Interstate 880. Interstate 880 is a heavily trafficked major freeway linking the San Francisco-Oakland Bay Bridge and San Jose, with considerable truck traffic. Davis Street is a vital four-lane arterial road connecting I-880 and Doolittle Drive, narrowing to two lanes towards the WPCP, and is a key route for commercial and industrial access with heavy daily truck traffic, peaking at 33,000 vehicles near I-880.[54]

The project entails the construction of a treatment wetland and a modular nitrification unit. All construction-related activities, including staging and parking, will be confined to existing WPCP property, avoiding closures or detours on public highways. Construction will lead to a temporary increase in local traffic due to material transportation and worker commute. Traffic impacts, including up to ten (10) daily truck trips during the soil import and placement phase and around 10-15 daily worker commutes, will be temporary and primarily occur on existing roads like I-880, Doolittle Drive, and Davis Street.

Segments of Davis Street and Doolittle Drive are part of the Alameda County Transportation Commission's (CTC) Congestion Management Program (CMP) as Tier 1 Roadways, maintaining Level

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[54] Alameda County Transportation Commission. 2023. Alameda County Highways and Arterials Fact Sheet, June 2023. Available at https://www.alamedactc.org/wp-content/uploads/2023/06/Highways_FS_June2023.pdf

of Service (LOS) A or B during peak times.[55,56] These standards are meant to regulate long-term traffic increases from new developments and are not applicable to temporary construction projects.

Given this context, the construction traffic is expected to be noticeable but will not significantly deteriorate long-term traffic conditions on major routes like I-880 and Davis Street. The operation phase of the Project will maintain the existing traffic and circulation patterns with no significant increase in onsite personnel. Consequently, the Project is not anticipated to cause further exceedance of the level-of-service standards set by the Alameda CTC. Thus, the traffic impact during both the construction and operational phases of the Project is assessed as less than significant.

<u>Impact Designation:</u> Less than Significant Impact

b) **Significantly increase vehicle miles traveled:** As highlighted earlier, construction traffic linked to the Proposed Project is not expected to substantially affect long-term traffic flow on key routes such as I-880 and SR-112 (the segment of Davis Street east of Doolittle Drive). During the operational phase of the Project, traffic and circulation patterns will largely remain consistent with current conditions. The continuation of maintenance trips will not lead to any significant increase in the number of onsite personnel. Consequently, in line with CEQA Guidelines §15064.3(b), the Proposed Project is not anticipated to increase vehicle miles traveled by automobiles. Therefore, the Project's impact on long-term operational traffic and circulation is considered to be less than significant.

<u>Impact Designation:</u> Less than Significant Impact

c) **Increase transportation hazards:** The construction and operations of the Project are not expected to modify the current layout of the road network in the area, nor will they introduce any unsafe design elements. Additionally, the Proposed Project will not bring in any uses that conflict with those already accommodated by the existing road system in the Project vicinity. As a result, the Proposed Project would have a less-than-significant traffic hazard impact.

<u>Impact Designation:</u> Less than Significant Impact

d) **Result in inadequate emergency access:** As previously mentioned, the construction and operation of the Proposed Project will not change the current layout of the existing road network serving the area. This includes maintaining unaltered access to local streets and adjacent properties, as well as ensuring uninterrupted access for emergency vehicles. Consequently, there will be no impact on emergency access due to the Project.

<u>Impact Designation:</u> No Impact

Cumulative Impacts on Transportation

[55] Alameda County Transportation Commission. 2023. Congestion Management Program. Available at https://www.alamedactc.org/planning/congestion-management-program

[56] Alameda County Transportation Commission. 2022. Multimodal Monitoring Summary Report, Appendix B. Available at https://www.alamedactc.org/planning/congestion-management-program

Additional traffic resulting from the Proposed Project during the construction period would neither be substantial relative to the existing traffic volume, nor disrupt traffic flows. Construction activities associated with the Proposed Project occurring simultaneously with maintenance activities at the Oyster Bay Regional Shoreline are not expected to be significant or disrupt local traffic circulation. However, this project has established mitigation measures that include traffic control measures, which would reduce the potential for conflicts with traffic associated with the Proposed Project.

3.19. Tribal Cultural Resources

ISSUES: TRIBAL CULTURAL RESOURCES	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Discussion

California Assembly Bill 52 (AB 52), effective from July 1, 2015, broadened the scope of CEQA by introducing the concept of tribal cultural resources. AB 52 acknowledges that a project causing a substantial adverse change to the significance of a tribal cultural resource could significantly affect the environment. The bill obligates lead agencies to adopt measures to avoid impacts that could modify the essential characteristics of these resources, whenever feasible, as outlined in Public Resources Code (PRC) Section 21084.3.

Tribal cultural resources, as per PRC Section 21074 (a)(1)(A) and (B), encompass sites, features, places, cultural landscapes, sacred places, and objects valued culturally by a California Native American tribe. These resources could either be listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources (PRC section 5020.1(k)), or determined as significant by the lead agency based on substantial evidence and criteria specified in subdivision (c) of PRC Section 5024.1, with consideration of their importance to a California Native American tribe.

AB 52 also mandates a formal consultation process with California tribes concerning these resources, which must be completed prior to the certification of a CEQA document. Lead agencies must initiate consultations with tribes traditionally and culturally affiliated with the Project's geographic area, including those who have requested notification of Proposed Projects within the lead agency's jurisdiction.

a) **Impacts to tribal resources listed in the CA Register of Historical Resources:** As detailed in Section 3.6 and Appendix F, Cultural Resources Report by LSA, no cultural resources were found at the Proposed Project site. A response from the NAHC on November 18, 2020, following a Sacred Lands File search, yielded no significant findings. LSA's survey of the Project area on November 13, 2020, also did not uncover any cultural resources. This research, combined with historical reports and aerial photographs, suggests that intact cultural resources are unlikely to exist in the Project area. Historically an intertidal marsh, aerial photos from 1946 and 1958 depict the present pond area as submerged, indicating it is now primarily disturbed fill sediment.

Based on the results of correspondence with the NAHC and the NWIC records search, no known tribal cultural resources listed or determined eligible for listing in the California Register or included in a local register of historical resources as defined in PRC Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be impacted by the Project.

However, if any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts to the resource resulting from the Project could be potentially significant. Any potential significant impacts would be reduced to a less than significant level by implementing Mitigation Measure CR-1 (*Inadvertent Discovery of Cultural Resources*; refer to the Section 3.5, Cultural Resources) and CR-2 (*Inadvertent Discovery of Human Remains*).

<u>Impact Designation:</u> Less than Significant with Mitigation

b) **Impacts to tribal resources**. Based on the results of correspondence with the NAHC and the NWIC records search, the City did not determine any resource that could potentially be affected by the Project to be a tribal cultural resource significant pursuant to criteria set forth in PRC Section 5024.1(c). Therefore, the Project is not anticipated to affect any such resources.

However, if any previously unrecorded archaeological resource were identified during project implementation, particularly ground-disturbing construction activities, and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(2) (determined by the lead agency to be significant pursuant to criteria set forth in PRC Section 5024.1[c]), any impacts to the resource resulting from the Project could be potentially significant. Any potential significant impacts would be reduced to a less than significant level by implementing Mitigation Measure CR-1 (*Inadvertent Discovery of Cultural Resources*; refer to the Section 3.5, Cultural Resources) and CR-2 (*Inadvertent Discovery of Human Remains*).

<u>Impact Designation:</u> Less than Significant with Mitigation

Cumulative Impacts on Tribal Resources

The geographic scope for cumulative effects on tribal cultural resources includes the immediate vicinity of locations where the Project could cause disturbance to known tribal cultural resources. Since the Project is not anticipated to impact known tribal cultural resources, there is no expected cumulative impact in this regard. However, it is possible that the Proposed Project and other cumulative projects in the vicinity might impact previously undiscovered archaeological resources, including human remains outside formal cemeteries, during ground-disturbing activities. These resources could be considered tribal cultural resources.

To address this, Mitigation Measures CR-1 and CR-2 have been established. These measures mandate halting work near any discovered resources until they are assessed by a Secretary of the Interior-qualified archaeologist and, in the case of human remains, notifying the County Coroner. Additionally, other projects undergoing CEQA review in the area will likely adopt similar inadvertent discovery measures. With the implementation of these mitigation measures, the Project's contribution to cumulative impacts on tribal cultural resources would not be substantial. Therefore, with these measures in place, the impact is considered less than significant.

3.20. Utilities and Service Systems

ISSUES: UTILITIES AND SERVICE SYSTEMS	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
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, which serves or may serve the project, that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
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?	☐	☐	☐	☒

Discussion

a) **Require new or expanded utilities:** As described in Chapter 2, *Project Background and Description*, and Section 3.11 Hydrology & Water Quality, the Proposed Project serves as a multi-benefit treatment wetland and emergency wet weather storage basin at an existing wastewater treatment facility. The Proposed Project would operate as a regulated entity under the 2022 NPDES permit. Secondary treated wastewater would be routed from the main WPCP to the nitrification facility and treatment wetland through existing and new pipes and pumping facilities and would not generate additional wastewater or stormwater.

Impact Designation: Less than Significant Impact

b) **Water supply:** The Proposed Project would not directly result in the need for expanded potable water. Construction and operation of the Proposed Project would not require additional potable water and will not generate impacts on existing water supplies from East Bay Municipal Utility District or other potential water suppliers.

Impact Designation: No Impact

c) Wastewater treatment capacity: Construction and operation of the Proposed Project would not require additional potable water supplies and will not result in the additional generation of wastewater beyond the insignificant demands associated with the presence of temporary construction staff during the construction phase. The Proposed Project would not directly result in the need for expanded wastewater capacity and will not compromise the City's ability to meet existing wastewater demands. In fact, the Proposed Project will assist the WPCP in reducing nutrient discharges to San Francisco Bay and meet projected regulatory obligations.

Impact Designation: Less than Significant Impact

d) Solid waste generation: In 2003, The City of San Leandro adopted a Construction and Demolition (C&D) Debris Recycling Ordinance to ensure that job site debris is recycled. As of January 1, 2017, the California Green Building Standards Code requires a C&D waste management plan and 65% waste diversion of non-hazardous materials for all new construction, all commercial renovations, and most residential additions/alterations. The Proposed Project should not generate significant quantities of C&D waste. Excavated soils shall be utilized to increase the existing grade of the basin and minimal amounts of surplus soil shall be hauled to the WPCP biosolids drying beds for permanent stockpiling. The Proposed Project would not require landfill service and would not affect landfill capacity.

Impact Designation: Less than Significant Impact

e) Compliance with solid waste rules: The contractor would be required to comply with all pertinent regulations regarding the disposal of solid waste generated by construction activities. No long-term solid waste generation would be associated with Proposed Project operations. There would be no impact.

Impact Designation: No Impact

Cumulative Impacts on Utilities and Service Systems

The area of influence for potential cumulative impacts on utilities and service systems includes both the Project site and the broader regions served by utility providers. While various projects detailed in Table 3-1 and other regional projects are expected to generate construction debris, their disposal in local landfills will have a minimal impact on landfill capacity. Therefore, the contribution of this project to the overall impact on landfill capacities is not expected to be significant.

3.21. Wildfire

ISSUES: WILDFIRE	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation 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 to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Discussion

a-d) Impacts on fire-related risks: Very High Fire Hazard Severity Zones in San Leandro are located east of I-580 in the East Bay Hills approximately 3.25 miles from the Proposed Project Site.[57,58] The project site is located within an urbanized industrial area of San Leandro and is surrounded by existing urban development. The project site is not located within a state responsibility area or near a very high fire hazard severity zone.

Impact Designation: No Impact

[57] Cal Fire. 2007. Fire Hazard Severity Zones in State Responsibility Area for Alameda County. Available at osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-maps

[58] Cal Fire. 2008. Very High Fire Hazard Severity Zones in Local Responsibility Area for San Leandro. Available at osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-maps

3.22. Mandatory Findings of Significance

ISSUES: MANDATORY FINDINGS OF SIGNIFICANCE	POTENTIALLY SIGNIFICANT IMPACT	LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion

a) **Potential for significant non-cumulative impacts:** The impact analyses outlined in the preceding sections demonstrate that the Proposed Project is not anticipated to have a substantial adverse effect on the environmental quality. Nevertheless, it is acknowledged that the Proposed Project does have the potential to yield noteworthy impacts in specific areas, including air quality, biological resources, hazards and hazardous materials, cultural resources, and tribal cultural resources.

The incorporation and execution of the prescribed mitigation measures, as delineated in this document, are designed to mitigate all potentially substantial impacts associated with the Project, reducing them to levels that are considered non-significant. Consequently, the Proposed Project is expected to have no adverse effects on the environmental quality and will not lead to significant reductions in the habitat of fish or wildlife species, cause a decline in fish or wildlife populations to non-sustainable levels, pose a threat to the existence of a plant or animal community, substantially diminish the quantity or limit the distribution of a rare or endangered plant or animal, or eradicate important instances of significant historical or prehistorical periods in California history.

Impact Designation: Less than Significant with Mitigation

b) **Potential for significant cumulative impacts:** As addressed in each of the impact analyses, the Proposed Project is not expected to result in cumulatively significant impacts.

Impact Designation: Less than Significant Impact

c) **Substantial effects on people:** The impact analysis presented in this chapter suggests that the Proposed Project is not expected to result in environmental effects that would produce substantial adverse consequences for human well-being. Adherence to regulatory requirements and the integration of protective measures within the Proposed Project would guarantee that the impacts remain minimal. In fact, the projected impact is deemed to be of negligible significance.

<u>Impact Designation:</u> Less than Significant Impact

4. MITIGATION MEASURES AND MITIGATION MONITORING AND REPORTING PROGRAM

This chapter summarizes the mitigation measures that would be integrated into the Proposed Project to reduce the potentially significant impacts to a less-than-significant level. Also provided is a Mitigation Monitoring and Reporting Program (MMRP) organized in a tabular format, keyed to each mitigation measure incorporated into the Project. The tables following each measure provide a breakdown of how the mitigation measure would be implemented, who would be responsible, and when it would occur. The tables consist of four column headings which are defined as follows:

- **Implementation Procedure:** If needed, this column provides additional information on how the mitigation measures would be implemented.
- **Monitoring and Reporting Actions:** This column contains an outline of the appropriate steps to verify compliance with the mitigation measure.
- **Monitoring Responsibility:** This column contains an assignment of responsibility for the monitoring and reporting tasks.
- **Monitoring Schedule:** The general schedule for conducting each monitoring and reporting task, identifying where appropriate both the timing and the frequency of the action.

Air Quality

Mitigation Measure AQ-1: Implement BAAQMD Basic Construction Mitigation Measures

The following BAAQMD BMPs shall be implemented during construction through contractual and specification requirements:

- Exterior demolition and construction areas shall be watered periodically to minimize the generation of dust and dirt.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers when required. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure, 13 CCR § 2485).[59] Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and tuned in accordance with manufacturer specifications. All equipment shall be checked by a certified visible emissions evaluator.
- A publicly visible sign shall be posted with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action

[59] 13 CCR § 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall require BAAQMD's Basic Construction Measures be included in contractor bid specifications.	City reviews contractor bid documents	City	Prior to construction
Contractor implements measures in the program.	City documents that measures are being implemented	City's construction manager	During construction

Biological Resources

Mitigation Measure BIO-1: Avoid and Minimize Impacts to Salt Marsh Wandering Shrew.

The following mitigation measures are recommended to avoid potential impacts to salt marsh wandering shrew:

- A CDFW-approved biologist shall conduct a preconstruction survey for the salt marsh wandering shrew at the appropriate time of day within the work area within 48 hours prior to the commencement of construction activities. The survey shall entail the biologist walking the work area limits to determine the possible presence of shrews. The biologist shall investigate all potential areas that may be utilized by this species for breeding, sheltering, movement, and other essential behaviors.
- Prior to vegetation removal, upland portions of the site shall be mowed for the purpose of removing cover and encouraging salt marsh wandering shrew to seek cover in the areas outside of the construction area.
- After vegetation is removed, silt exclusion fencing with wire-mesh backing shall be installed by hand along all tidal channels to prevent salt marsh wandering shrew from entering the active work area, to protect adjacent habitat from construction activities or accidental spills, and to exclude workers from adjacent habitat.
- If a salt marsh wandering shrew is observed in or near the Project area, all construction shall cease until the salt marsh wandering shrew is captured by a CDFW-approved biologist possessing the appropriate permits and relocated to other suitable habitat on the Project site in accordance with a pre-approved SSRP. A brief SSRP shall be submitted to and approved by the CDFW and USFWS prior to the re-initiation of any Project activities.
- The area beneath vehicles or equipment parked in the Project area shall be checked for the presence of salt marsh wandering shrew before being moved, during construction, and during movement of staging materials within the entire project site.
- Vehicle speed limits on the Project site shall not exceed 10 miles per hour.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall contract with a qualified biologist to conduct pre-construction surveys for salt marsh wandering shrew.	City executes contract	City, Qualified biologist	Prior to construction
City and the appropriate regulatory agency shall establish relocation protocols in a SSRP, if salt marsh wandering shrew are found.	City consults with agency	City, regulatory agency	Prior to construction
City shall include in its contractor specifications that fencing and precautionary measures buffer zones will be avoided during construction.	City reviews contractor bid documents.	City	Prior to construction
Contractor implements measures in the program.	City documents that measures are being implemented	City's construction manager	During construction

Mitigation Measure BIO-2: Avoid and Minimize Impacts to Roosting Bats

A qualified biologist shall conduct a pre-construction survey for roosting bats in all suitable bat roosting habitat (large trees, concrete vault box) within the Project area within 14 days prior to the beginning of project-related activities. If active bat roosts are discovered or if evidence of recent prior occupation is established, a buffer shall be established around the roost site until the roost site is no longer active. If an active bat roost needs to be removed as part of the Proposed Project, the Project biologist would need to consult CDFW to determine appropriate methods for the removal of the roost. As part of CDFW's approval, a new roost site may need to be created on the Project site as mitigation.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall contract with a qualified biologist to conduct pre-construction surveys for roosting bats.	City executes contract	City, Qualified biologist	Prior to construction
City and the appropriate regulatory agency shall establish buffer zones if active roost sites are observed.	City consults with agency	City, regulatory agency	Prior to construction
City shall include in its contractor specifications that buffer zones will be avoided during construction.	City reviews contractor bid documents.	City	Prior to construction

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
Contractor implements measures in the program.	City documents that measures are being implemented	City’s construction manager	During construction

Mitigation Measure BIO-3: Avoid and Minimize Impacts to Nesting Birds

Project staging, project construction, vegetation removal, or tree trimming should be performed outside of the bird nesting season (February 1st through August 31st) to avoid impacts to nesting birds; if these activities must be performed during the nesting bird season, a qualified biologist shall be retained to conduct a pre- construction survey in the Project construction and staging areas for nesting birds and verify the presence or absence of nesting birds no more than 14 days prior to construction activities or after any construction breaks of 14 days or more.

Surveys shall be performed for the Project construction and staging areas and suitable habitat within 500 feet of the Project construction and staging areas, where accessible, to locate the presence of nesting birds and raptors. If nesting birds and raptors do not occur within 250 and 500 feet of the Project site, respectively, then no further action is required if construction begins within two weeks.

If active nests are located during the pre-construction bird nesting surveys, no-disturbance buffer zones shall be established around nests, with a buffer size established by the qualified biologist. If the survey indicates the presence of active nests, no-disturbance buffer zones shall be established around the nests by the qualified biologist, as follows:

- For raptor nests, the size of the buffer zone shall be a 250-foot radius centered on the nest;
- For other birds, the size of the buffer zone shall be a 50- to 100-foot radius centered on the nest.

These distances may be adjusted depending on the level of surrounding ambient activity and if an obstruction, such as a building or structure, is within line-of-sight between the nest and construction. Reduced buffers may be allowed if a full-time qualified biologist is present to monitor the nest and has authority to halt construction if bird behavior indicates continued activities could lead to nest failure. Buffered zones shall be avoided during construction-related activities until young have fledged or the nest is otherwise abandoned.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall contract with a qualified biologist to conduct pre-construction surveys for nesting birds.	City executes contract	City, Qualified biologist	Prior to construction.
City and the appropriate regulatory agency shall establish buffer zones, if active nests are observed.	City consults with agency	City, regulatory agency	Prior to construction
City shall include in its contractor specifications	City reviews contractor bid documents.	City	Prior to construction

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
that buffer zones will be avoided during construction.			
Contractor implements measures in the program.	City documents that measures are being implemented	City's construction manager	During construction

Mitigation Measure BIO-4: Exclusionary Fencing and other Avoidance Measures

- Prior to initiation of construction activity, 48-inch silt exclusion fencing shall be installed by hand along the southern edge of the access road running on top of the levee between the basin and San Francisco Bay, as well as on either side of the access road where it crosses the culvert between the basin and the solar array. The purpose of the fencing is to protect habitat within the tidal channel from earthmoving activities or accidental spills, and to exclude workers from the channel.
- Prior to construction, all construction workers shall take part in a worker environmental awareness program conducted by a qualified biologist. The awareness program will be conducted at the start of construction and thereafter as required for new construction personnel. Personnel shall be instructed to avoid areas beyond the exclusionary fencing and any other precautions intended to ensure avoidance pursuant to Mitigation Measure BIO-1 through BIO-3.
- Vehicle speed limits on the Project site shall not exceed 10 miles per hour.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall contract with a qualified biologist to mark and install exclusionary fencing along all tidal channels within the Proposed Project site.	City executes contract	City, Qualified biologist	Prior to construction.
City shall contract with a qualified biologist to administer a worker environmental awareness training prior to the initiation of construction activity.	City executes contract	City, Qualified biologist	Prior to construction.
City shall include in its contractor specifications that workers will participate in an environmental awareness training prior to initiation of construction activity, that exclusion zones will be avoided during construction, and that	City reviews contractor bid documents.	City and contractor	Prior to construction

vehicle speeds shall not exceed 10 miles per hour.			
Contractor implements measures in the program.	City documents that measures are being implemented	City's construction manager	During construction

Cultural Resources

Mitigation Measure CR-1: Inadvertent Discovery of Cultural Resources.

Should any prehistoric or historic-period archaeological resources be discovered during construction, all activities within a 100-foot radius must immediately cease, and San Leandro should be informed. An archaeologist qualified by the Secretary of the Interior standards must inspect the site within 24 hours of the discovery. Should the findings be deemed as either a historical resource or a unique archaeological resource (as defined by the CEQA Guidelines), appropriate mitigation measures will be taken in line with PRC Section 21083.2 and Section 15126.4 of the CEQA Guidelines, favoring preservation in situ whenever possible.

In accordance with Section 15126.4(b)(3), preservation in situ may be achieved through various means such as adjusting construction plans to avoid the resource, integrating the resource within a designated open space, covering the resource with a protective cap, or transferring the site into a permanent conservation easement. If avoidance is not feasible, a detailed treatment plan will be developed and implemented by a qualified archaeologist in consultation with San Leandro and any relevant Native American tribes.

Treatment of unique archaeological resources will adhere to the stipulations of PRC Section 21083.2. Generally, treatment might involve selective excavation, artifact collection, thorough site documentation, and historical research, all aimed at salvaging important scientific data from the impacted portions of the resource. The treatment plan should include provisions for analyzing the data in a regional context, timely reporting of results, proper curation of artifacts and data in an approved facility, and dissemination of the reports to local and state repositories, libraries, and interested professionals.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall review construction specifications to ensure procedures for archaeological resources discovery are included.	City reviews construction specifications.	City	Prior to construction.
In the event subsurface archeological resources are discovered, construction within 50 feet of the find shall be halted and the qualified archaeologist shall be notified.	City OLSD shall notify the County of the discovery.	City	During construction.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
The archaeologist shall complete a final monitoring report.	Archaeologist submits final report to the City.	Qualified archaeologist.	Following construction.

Mitigation Measure CR-2: Inadvertent Discovery of Human Remains

If human remains are discovered during construction activities, all work within 100 feet of the site must stop immediately. The Alameda County Coroner must be notified to ascertain whether an investigation into the cause of death is necessary. If the remains are determined to be Native American, the NAHC must be contacted within 24 hours.

The NAHC will identify the person or persons believed to be the most likely descendant(s) of the deceased Native American. These individuals will then provide recommendations to San Leandro regarding the proper treatment of the human remains and any associated grave goods.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall review construction specifications to ensure procedures for human remains discovery are included.	City reviews construction specifications.	City	Prior to construction.
In the event human remains are discovered, construction in the area shall be halted and OLSD shall consult the County Coroner.	City shall notify the County of the discovery.	City	During construction.

Hazards and Hazardous Materials

Mitigation Measure HZ-1 – Active Fuel Pipelines Hazards: Prior to commencing construction activities, the exact positions of the three fuel lines must be accurately marked and confirmed in consultation with Kinder Morgan, in accordance with their Developer Handbook.[60] Project plans must be provided to Kinder Morgan at least six weeks before construction commencement to allow for the receipt of an approval letter, which may contain specific procedures to be followed. Additionally, before any excavation occurs near the pipeline, the City or its contractor must notify 811 at least three days before the excavation.

Excavation or ground disturbance in proximity to active pipelines requires the implementation of protocols for informing the owners/operators in the event of an accidental rupture, followed by the implementation of shutdown procedures. In line with the Developer Handbook, the City will promptly notify Kinder Morgan's Operations Supervisor or Area Manager if damage occurs to a pipeline. If the

[60] Kinder Morgan. 2021. Developer Handbook: Guidance for Working Near or Adjacent to a Pipeline. Available at https://www.kindermorgan.com/WWWKM/media/Documents/Public%20Awareness/KM_Developer_Handbook.pdf

damage results in releasing any flammable, toxic, or corrosive substance that poses a risk to life or property, the City will immediately contact 911. Moreover, if the damage affects a pipeline not owned by Kinder Morgan, the owner or operator of that pipeline must also be notified.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall coordinate with Kinder Morgan to identify and mark all pipelines in the Proposed Project site and supply Kinder Morgan with Project plans for review.	City reviews contractor bid documents.	City	Prior to construction.
City shall secure an approval letter from Kinder Morgan prior to commencement of construction activities.	City documents the receipt of approval letter and incorporates additional measures into contractor specifications.	City	Prior to construction
City shall include in its contractor specifications that buffer zones will be avoided during construction and any other pipeline avoidance measured identified by Kinder Morgan shall be implemented.	City reviews contractor bid documents.	City and contractor	Prior to construction
Contractor implements measures in the program.	City documents that measures are being implemented	City's construction manager	During construction

Mitigation Measure HZ-2: Vegetation Management

Maintenance activities shall be documented in a Vegetation Management Plan, which shall be prepared before construction. Activities will include periodic draining, necessitating the cessation of treatment activities in the treatment wetland to address aquatic weed establishment and vegetation management. The Proposed Project site will remain subject to periodic inspections by the Alameda County Mosquito Abatement District and USDA Wildlife Biologists. Adaptive management strategies shall be implemented in consultation with these agencies if nuisance vegetation, mosquito populations, or wildlife hazards present themselves.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
City shall contract with a qualified biologist or suitably qualified contractor to develop a Vegetation Management Plan for the operations phase of the Proposed Project to address wildlife	City executes contract	City, Qualified biologist or another contractor	Prior to construction.

Implementation Procedure	Monitoring and Reporting Actions	Monitoring Responsibility	Monitoring Schedule
hazards and mosquito abatement.			
City implements the Vegetation Management Plan and other measures recommended by the Alameda County Mosquito Abatement District or USDA.	City documents that measures are being implemented.	City	During operation of the Project.

5. LIST OF PREPARERS

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APPENDIX A: AIR EMISSIONS MODELING RESULTS

Treatment Wetland Project Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Treatment Wetland Project
Construction Start Date	2/1/2024
Operational Year	2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.90
Precipitation (days)	27.6
Location	37.714377904948975, -122.19904500100306
County	Alameda
City	San Leandro
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1409
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

City Park	5.79	Acre	5.79	0.00	5.79	5.79	—	Proposed treatment wetland

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-5	Use Advanced Engine Tiers
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-B	Water Active Demolition Sites
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.26	4.42	43.3	53.7	0.16	1.45	32.8	33.5	1.35	5.66	6.30	—	23,641	23,641	1.21	3.41	47.9	24,737
Mit.	5.26	4.42	43.3	53.7	0.16	1.45	23.0	23.5	1.35	4.18	4.65	—	23,641	23,641	1.21	3.41	47.9	24,737
% Reduced	—	—	—	—	—	—	30%	30%	—	26%	26%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.49	0.39	3.91	4.18	0.01	0.14	0.78	0.91	0.13	0.22	0.34	—	1,500	1,500	0.07	0.10	0.58	1,531

Mit.	0.48	0.38	3.85	4.23	0.01	0.13	0.50	0.63	0.12	0.13	0.25	—	1,500	1,500	0.07	0.10	0.58	1,531
% Reduced	2%	2%	2%	-1%	—	2%	36%	31%	2%	42%	27%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.09	0.07	0.71	0.76	< 0.005	0.02	0.14	0.17	0.02	0.04	0.06	—	248	248	0.01	0.02	0.10	253
Mit.	0.09	0.07	0.70	0.77	< 0.005	0.02	0.09	0.11	0.02	0.02	0.05	—	248	248	0.01	0.02	0.10	253
% Reduced	2%	2%	2%	-1%	—	2%	36%	31%	2%	42%	27%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	5.26	4.42	43.3	53.7	0.16	1.45	32.8	33.5	1.35	5.66	6.30	—	23,641	23,641	1.21	3.41	47.9	24,737
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.49	0.39	3.91	4.18	0.01	0.14	0.78	0.91	0.13	0.22	0.34	—	1,500	1,500	0.07	0.10	0.58	1,531
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.09	0.07	0.71	0.76	< 0.005	0.02	0.14	0.17	0.02	0.04	0.06	—	248	248	0.01	0.02	0.10	253

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	5.26	4.42	43.3	53.7	0.16	1.45	23.0	23.5	1.35	4.18	4.65	—	23,641	23,641	1.21	3.41	47.9	24,737
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.48	0.38	3.85	4.23	0.01	0.13	0.50	0.63	0.12	0.13	0.25	—	1,500	1,500	0.07	0.10	0.58	1,531
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.09	0.07	0.70	0.77	< 0.005	0.02	0.09	0.11	0.02	0.02	0.05	—	248	248	0.01	0.02	0.10	253

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	< 0.005	-1.00	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	< 0.005	-1.00	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.05	55.5	55.6	0.01	< 0.005	0.00	56.2

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	0.02	0.02	< 0.005	< 0.005	0.00	0.02
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	335	335	0.05	0.01	—	339
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
User-Defined	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	< 0.005	< 0.005	< 0.005	< 0.005	-1.00	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	0.02	0.02	< 0.005	< 0.005	0.00	0.02
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	335	335	0.05	0.01	—	339
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
User-Defined	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	< 0.005	< 0.005	< 0.005	< 0.005	-1.00	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	0.01	0.01	< 0.005	< 0.005	0.00	0.01
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	335	335	0.05	0.01	—	339
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	55.5	55.5	0.01	< 0.005	—	56.1
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.05	55.5	55.6	0.01	< 0.005	0.00	56.2

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	0.02	0.02	< 0.005	< 0.005	0.00	0.02
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	335	335	0.05	0.01	—	339
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
User-Defined	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	< 0.005	< 0.005	< 0.005	< 0.005	-1.00	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	0.02	0.02	< 0.005	< 0.005	0.00	0.02
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	335	335	0.05	0.01	—	339
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
User-Defined	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	< 0.005	< 0.005	< 0.005	< 0.005	-1.00	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	0.01	0.01	< 0.005	< 0.005	0.00	0.01
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	335	335	0.05	0.01	—	339
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.28	335	336	0.08	0.01	0.00	340
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005
Area	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	55.5	55.5	0.01	< 0.005	—	56.1
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16
Total	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.00	< 0.005	0.05	55.5	55.6	0.01	< 0.005	0.00	56.2

3. Construction Emissions Details

3.1. Demo (Ph 1.2) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	0.90	6.60	6.93	0.02	0.26	—	0.26	0.24	—	0.24	—	2,092	2,092	0.08	0.02	—	2,099
Demolition	—	—	—	—	—	—	27.1	27.1	—	4.11	4.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	28.7	28.7	< 0.005	< 0.005	—	28.8
Demolition	—	—	—	—	—	—	0.37	0.37	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.74	4.74	< 0.005	< 0.005	—	4.76
Demolition	—	—	—	—	—	—	0.07	0.07	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.06	0.05	0.04	0.62	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	132	132	< 0.005	< 0.005	0.56	135
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	1.61	0.48	26.2	10.4	0.14	0.40	5.56	5.96	0.40	1.52	1.92	—	21,417	21,417	1.12	3.39	47.3	22,504
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.72
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.37	0.14	< 0.005	0.01	0.08	0.08	0.01	0.02	0.03	—	293	293	0.02	0.05	0.28	308
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	48.6	48.6	< 0.005	0.01	0.05	51.0

3.2. Demo (Ph 1.2) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.33	0.31	2.22	11.2	0.02	0.07	—	0.07	0.07	—	0.07	—	2,092	2,092	0.08	0.02	—	2,099
Demolition	—	—	—	—	—	—	17.4	17.4	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	28.7	28.7	< 0.005	< 0.005	—	28.8
Demolition	—	—	—	—	—	—	0.24	0.24	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.74	4.74	< 0.005	< 0.005	—	4.76
Demolition	—	—	—	—	—	—	0.04	0.04	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.04	0.62	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	132	132	< 0.005	< 0.005	0.56	135
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	1.61	0.48	26.2	10.4	0.14	0.40	5.56	5.96	0.40	1.52	1.92	—	21,417	21,417	1.12	3.39	47.3	22,504
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.69	1.69	< 0.005	< 0.005	< 0.005	1.72
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.37	0.14	< 0.005	0.01	0.08	0.08	0.01	0.02	0.03	—	293	293	0.02	0.05	0.28	308

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.28
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	48.6	48.6	< 0.005	0.01	0.05	51.0

3.3. Initial Site Prep (PH 1.1) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.57	3.84	30.8	32.2	0.09	1.31	—	1.31	1.20	—	1.20	—	10,274	10,274	0.42	0.08	—	10,309
Dust From Material Movement	—	—	—	—	—	—	0.99	0.99	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.42	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	141	141	0.01	< 0.005	—	141
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	23.3	23.3	< 0.005	< 0.005	—	23.4
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.20	0.14	2.28	0.00	0.00	0.45	0.45	0.00	0.11	0.11	—	486	486	0.01	0.02	2.07	493
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.21	6.21	< 0.005	< 0.005	0.01	6.31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.03	1.03	< 0.005	< 0.005	< 0.005	1.04
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Initial Site Prep (PH 1.1) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.57	3.84	30.8	32.2	0.09	1.31	—	1.31	1.20	—	1.20	—	10,274	10,274	0.42	0.08	—	10,309
Dust From Material Movement	—	—	—	—	—	—	0.39	0.39	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.42	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	141	141	0.01	< 0.005	—	141
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	23.3	23.3	< 0.005	< 0.005	—	23.4
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.22	0.20	0.14	2.28	0.00	0.00	0.45	0.45	0.00	0.11	0.11	—	486	486	0.01	0.02	2.07	493
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.21	6.21	< 0.005	< 0.005	0.01	6.31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.03	1.03	< 0.005	< 0.005	< 0.005	1.04
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (Ph 1.3-1.5) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.18	1.83	17.2	16.6	0.02	0.77	—	0.77	0.71	—	0.71	—	2,663	2,663	0.11	0.02	—	2,672

Dust From Material Movement	—	—	—	—	—	—	8.29	8.29	—	4.23	4.23	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.47	0.45	< 0.005	0.02	—	0.02	0.02	—	0.02	—	73.0	73.0	< 0.005	< 0.005	—	73.2
Dust From Material Movement	—	—	—	—	—	—	0.23	0.23	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.1	12.1	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.73	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	155	155	< 0.005	0.01	0.66	157
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.74	0.22	12.0	4.79	0.06	0.18	2.55	2.73	0.18	0.70	0.88	—	9,816	9,816	0.51	1.56	21.7	10,314

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.95	3.95	< 0.005	< 0.005	0.01	4.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.01	0.34	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	269	269	0.01	0.04	0.26	282
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.65	0.65	< 0.005	< 0.005	< 0.005	0.66
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	44.5	44.5	< 0.005	0.01	0.04	46.7

3.6. Grading (Ph 1.3-1.5) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.18	1.83	17.2	16.6	0.02	0.77	—	0.77	0.71	—	0.71	—	2,663	2,663	0.11	0.02	—	2,672
Dust From Material Movement	—	—	—	—	—	—	3.23	3.23	—	1.65	1.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.47	0.45	< 0.005	0.02	—	0.02	0.02	—	0.02	—	73.0	73.0	< 0.005	< 0.005	—	73.2
Dust From Material Movement	—	—	—	—	—	—	0.09	0.09	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.1	12.1	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.73	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	155	155	< 0.005	0.01	0.66	157
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.74	0.22	12.0	4.79	0.06	0.18	2.55	2.73	0.18	0.70	0.88	—	9,816	9,816	0.51	1.56	21.7	10,314
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.95	3.95	< 0.005	< 0.005	0.01	4.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.02	0.01	0.34	0.13	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	269	269	0.01	0.04	0.26	282
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.65	0.65	< 0.005	< 0.005	< 0.005	0.66
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	44.5	44.5	< 0.005	0.01	0.04	46.7

3.7. Grading (Ph 3.3) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.88	1.58	13.9	16.9	0.04	0.48	—	0.48	0.44	—	0.44	—	4,217	4,217	0.17	0.03	—	4,231
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.19	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	57.8	57.8	< 0.005	< 0.005	—	58.0
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.56	9.56	< 0.005	< 0.005	—	9.60
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.09	1.56	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	331	331	0.01	0.01	1.41	336
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.24	4.24	< 0.005	< 0.005	0.01	4.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.70	0.70	< 0.005	< 0.005	< 0.005	0.71
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Grading (Ph 3.3) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.88	1.58	13.9	16.9	0.04	0.48	—	0.48	0.44	—	0.44	—	4,217	4,217	0.17	0.03	—	4,231
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.19	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	57.8	57.8	< 0.005	< 0.005	—	58.0
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.56	9.56	< 0.005	< 0.005	—	9.60

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.09	1.56	0.00	0.00	0.31	0.31	0.00	0.07	0.07	—	331	331	0.01	0.01	1.41	336
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.24	4.24	< 0.005	< 0.005	0.01	4.30
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.70	0.70	< 0.005	< 0.005	< 0.005	0.71
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building (Ph 2.1-2.2) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.25	1.89	14.0	13.1	0.05	0.50	—	0.50	0.46	—	0.46	—	5,308	5,308	0.22	0.04	—	5,326
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.38	0.36	< 0.005	0.01	—	0.01	0.01	—	0.01	—	145	145	0.01	< 0.005	—	146
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.1	24.1	< 0.005	< 0.005	—	24.2
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Building (Ph 2.1-2.2) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.25	1.89	14.0	13.1	0.05	0.50	—	0.50	0.46	—	0.46	—	5,308	5,308	0.22	0.04	—	5,326
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.38	0.36	< 0.005	0.01	—	0.01	0.01	—	0.01	—	145	145	0.01	< 0.005	—	146
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.1	24.1	< 0.005	< 0.005	—	24.2

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Building (Ph 3.1) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	3.23	2.71	24.7	35.3	0.07	0.97	—	0.97	0.89	—	0.89	—	7,198	7,198	0.29	0.06	—	7,223
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.36	1.93	< 0.005	0.05	—	0.05	0.05	—	0.05	—	394	394	0.02	< 0.005	—	396
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.25	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	65.3	65.3	< 0.005	< 0.005	—	65.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Building (Ph 3.1) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.23	2.71	24.7	35.3	0.07	0.97	—	0.97	0.89	—	0.89	—	7,198	7,198	0.29	0.06	—	7,223
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.36	1.93	< 0.005	0.05	—	0.05	0.05	—	0.05	—	394	394	0.02	< 0.005	—	396
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.25	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	65.3	65.3	< 0.005	< 0.005	—	65.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Building (Ph 3.4) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	0.20	1.45	1.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	472	472	0.02	< 0.005	—	474
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.47	6.47	< 0.005	< 0.005	—	6.49
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.07	1.07	< 0.005	< 0.005	—	1.07
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.14. Building (Ph 3.4) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	0.20	1.45	1.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	472	472	0.02	< 0.005	—	474
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.47	6.47	< 0.005	< 0.005	—	6.49
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.07	1.07	< 0.005	< 0.005	—	1.07
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Building (Ph 4.1) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	0.20	1.45	1.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	472	472	0.02	< 0.005	—	474
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.47	6.47	< 0.005	< 0.005	—	6.49
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.07	1.07	< 0.005	< 0.005	—	1.07
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.16. Building (Ph 4.1) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	0.20	1.45	1.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	472	472	0.02	< 0.005	—	474
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.47	6.47	< 0.005	< 0.005	—	6.49
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.07	1.07	< 0.005	< 0.005	—	1.07
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Building (Ph 5.1) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.74	2.65	< 0.005	0.06	—	0.06	0.06	—	0.06	—	433	433	0.02	< 0.005	—	435
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.9	11.9	< 0.005	< 0.005	—	11.9

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.97	1.97	< 0.005	< 0.005	—	1.97
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.18. Building (Ph 5.1) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.74	2.65	< 0.005	0.06	—	0.06	0.06	—	0.06	—	433	433	0.02	< 0.005	—	435
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.9	11.9	< 0.005	< 0.005	—	11.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.97	1.97	< 0.005	< 0.005	—	1.97
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.19. Trenching (Ph 3.2) (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.97	0.81	7.01	7.10	0.02	0.26	—	0.26	0.24	—	0.24	—	1,901	1,901	0.08	0.02	—	1,907
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.19	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.1	52.1	< 0.005	< 0.005	—	52.2
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.62	8.62	< 0.005	< 0.005	—	8.65
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.78	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	167	167	< 0.005	0.01	0.71	169
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.26	4.26	< 0.005	< 0.005	0.01	4.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.72
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.20. Trenching (Ph 3.2) (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.97	0.81	7.01	7.10	0.02	0.26	—	0.26	0.24	—	0.24	—	1,901	1,901	0.08	0.02	—	1,907
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.19	0.19	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.1	52.1	< 0.005	< 0.005	—	52.2
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.62	8.62	< 0.005	< 0.005	—	8.65
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.05	0.78	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	167	167	< 0.005	0.01	0.71	169
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.26	4.26	< 0.005	< 0.005	0.01	4.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.72
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.1.2. Mitigated

Mobile source emissions results are presented in Sections 2.5. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339
Total	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339
Total	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	55.5	55.5	0.01	< 0.005	—	56.1
Total	—	—	—	—	—	—	—	—	—	—	—	—	55.5	55.5	0.01	< 0.005	—	56.1

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339
Total	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339
Total	—	—	—	—	—	—	—	—	—	—	—	—	335	335	0.05	0.01	—	339
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	—	55.5	55.5	0.01	< 0.005	—	56.1
Total	—	—	—	—	—	—	—	—	—	—	—	—	55.5	55.5	0.01	< 0.005	—	56.1

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

City Park	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Total	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Total	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16
Total	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Total	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Total	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.98
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
City Park	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16
Total	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme nt Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	-1.00	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demo (Ph 1.2)	Demolition	7/13/2024	7/19/2024	5.00	5.00	Clear and grub, demo
Initial Site Prep (PH 1.1)	Site Preparation	7/1/2024	7/5/2024	5.00	5.00	Pond Prep, Pond dewatering, Cement stablize surface
Grading (Ph 1.3-1.5)	Grading	7/20/2024	8/2/2024	5.00	10.0	Soil transfer and placement, import, grading
Grading (Ph 3.3)	Grading	8/17/2024	8/23/2024	5.00	5.00	bioreactors and cover, topsoil placement

Building (Ph 2.1-2.2)	Building Construction	7/20/2024	8/2/2024	5.00	10.0	Foundation install and MABR mechanical and electrical install
Building (Ph 3.1)	Building Construction	8/3/2024	8/30/2024	5.00	20.0	Liner Install
Building (Ph 3.4)	Building Construction	8/24/2024	8/30/2024	5.00	5.00	Irrigation system install
Building (Ph 4.1)	Building Construction	8/31/2024	9/6/2024	5.00	5.00	Retrofit outfall structure, pipe connection, valving
Building (Ph 5.1)	Building Construction	9/7/2024	9/20/2024	5.00	10.0	Planting
Trenching (Ph 3.2)	Trenching	8/3/2024	8/16/2024	5.00	10.0	Piping installation

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demo (Ph 1.2)	Dumpers/Tenders	Diesel	Average	3.00	5.00	16.0	0.38
Demo (Ph 1.2)	Excavators	Diesel	Average	1.00	5.00	36.0	0.38
Demo (Ph 1.2)	Off-Highway Trucks	Diesel	Average	1.00	5.00	350	0.73
Demo (Ph 1.2)	Sweepers/Scrubbers	Diesel	Average	1.00	5.00	150	0.46
Initial Site Prep (PH 1.1)	Generator Sets	Diesel	Tier 4 Final	1.00	1.00	14.0	0.40
Initial Site Prep (PH 1.1)	Graders	Diesel	Average	3.00	5.00	140	0.37
Initial Site Prep (PH 1.1)	Surfacing Equipment	Diesel	Average	6.00	5.00	310	0.30
Initial Site Prep (PH 1.1)	Off-Highway Trucks	Diesel	Average	6.00	5.00	350	0.38
Initial Site Prep (PH 1.1)	Rollers	Diesel	Average	3.00	5.00	36.0	0.38
Initial Site Prep (PH 1.1)	Sweepers/Scrubbers	Diesel	Average	3.00	5.00	150	0.46
Grading (Ph 1.3-1.5)	Tractors/Loaders/Backhoes	Diesel	Average	1.00	5.00	84.0	0.41
Grading (Ph 1.3-1.5)	Rollers	Diesel	Average	2.00	5.00	36.0	0.37
Grading (Ph 1.3-1.5)	Skid Steer Loaders	Diesel	Average	1.00	5.00	71.0	0.40
Grading (Ph 1.3-1.5)	Rubber Tired Dozers	Diesel	Average	2.00	5.00	367	0.40

Grading (Ph 1.3-1.5)	Sweepers/Scrubbers	Diesel	Average	1.00	5.00	150	0.46
Grading (Ph 3.3)	Tractors/Loaders/Backhoes	Diesel	Average	3.00	5.00	84.0	0.41
Grading (Ph 3.3)	Skid Steer Loaders	Diesel	Average	3.00	5.00	71.0	0.38
Grading (Ph 3.3)	Off-Highway Trucks	Diesel	Average	3.00	5.00	350	0.37
Grading (Ph 3.3)	Aerial Lifts	Diesel	Average	3.00	5.00	46.0	0.40
Grading (Ph 3.3)	Dumpers/Tenders	Diesel	Average	2.00	8.00	16.0	0.38
Grading (Ph 3.3)	Sweepers/Scrubbers	Diesel	Average	1.00	5.00	150	0.46
Building (Ph 2.1-2.2)	Generator Sets	Diesel	Average	2.00	5.00	14.0	0.20
Building (Ph 2.1-2.2)	Off-Highway Trucks	Diesel	Average	3.00	5.00	350	0.74
Building (Ph 2.1-2.2)	Cranes	Diesel	Average	1.00	5.00	367	0.29
Building (Ph 2.1-2.2)	Aerial Lifts	Diesel	Average	1.00	5.00	46.0	0.45
Building (Ph 3.1)	Tractors/Loaders/Backhoes	Diesel	Average	8.00	5.00	84.0	0.20
Building (Ph 3.1)	Skid Steer Loaders	Diesel	Average	8.00	5.00	71.0	0.74
Building (Ph 3.1)	Off-Highway Trucks	Diesel	Average	4.00	5.00	350	0.29
Building (Ph 3.1)	Generator Sets	Diesel	Average	8.00	5.00	14.0	0.45
Building (Ph 3.1)	Rubber Tired Loaders	Diesel	Average	4.00	5.00	150	0.37
Building (Ph 3.4)	Off-Highway Trucks	Diesel	Average	1.00	5.00	350	0.20
Building (Ph 3.4)	Generator Sets	Diesel	Average	1.00	5.00	14.0	0.74
Building (Ph 4.1)	Off-Highway Trucks	Diesel	Average	1.00	5.00	350	0.20
Building (Ph 4.1)	Generator Sets	Diesel	Average	1.00	5.00	14.0	0.74
Building (Ph 5.1)	Tractors/Loaders/Backhoes	Diesel	Average	1.00	5.00	84.0	0.20
Building (Ph 5.1)	Skid Steer Loaders	Diesel	Average	1.00	5.00	71.0	0.74
Building (Ph 5.1)	Dumpers/Tenders	Diesel	Average	1.00	5.00	16.0	0.29
Trenching (Ph 3.2)	Excavators	Diesel	Average	1.10	5.00	36.0	0.38
Trenching (Ph 3.2)	Tractors/Loaders/Backhoes	Diesel	Average	1.26	5.00	84.0	0.37

Trenching (Ph 3.2)	Skid Steer Loaders	Diesel	Average	1.26	5.00	71.0	0.37
Trenching (Ph 3.2)	Off-Highway Trucks	Diesel	Average	1.26	5.00	250	0.38
Trenching (Ph 3.2)	Rollers	Diesel	Average	1.10	5.00	36.0	0.38
Trenching (Ph 3.2)	Sweepers/Scrubbers	Diesel	Average	0.84	5.00	250	0.46
Trenching (Ph 3.2)	Dumpers/Tenders	Diesel	Average	0.73	5.00	16.0	0.38

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demo (Ph 1.2)	Dumpers/Tenders	Diesel	Average	3.00	5.00	16.0	0.38
Demo (Ph 1.2)	Excavators	Diesel	Tier 4 Final	1.00	5.00	36.0	0.38
Demo (Ph 1.2)	Off-Highway Trucks	Diesel	Tier 4 Final	1.00	5.00	350	0.73
Demo (Ph 1.2)	Sweepers/Scrubbers	Diesel	Tier 4 Final	1.00	5.00	150	0.46
Initial Site Prep (PH 1.1)	Generator Sets	Diesel	Tier 4 Final	1.00	1.00	14.0	0.40
Initial Site Prep (PH 1.1)	Graders	Diesel	Average	3.00	5.00	140	0.37
Initial Site Prep (PH 1.1)	Surfacing Equipment	Diesel	Average	6.00	5.00	310	0.30
Initial Site Prep (PH 1.1)	Off-Highway Trucks	Diesel	Average	6.00	5.00	350	0.38
Initial Site Prep (PH 1.1)	Rollers	Diesel	Average	3.00	5.00	36.0	0.38
Initial Site Prep (PH 1.1)	Sweepers/Scrubbers	Diesel	Average	3.00	5.00	150	0.46
Grading (Ph 1.3-1.5)	Tractors/Loaders/Backhoes	Diesel	Average	1.00	5.00	84.0	0.41
Grading (Ph 1.3-1.5)	Rollers	Diesel	Average	2.00	5.00	36.0	0.37
Grading (Ph 1.3-1.5)	Skid Steer Loaders	Diesel	Average	1.00	5.00	71.0	0.40
Grading (Ph 1.3-1.5)	Rubber Tired Dozers	Diesel	Average	2.00	5.00	367	0.40
Grading (Ph 1.3-1.5)	Sweepers/Scrubbers	Diesel	Average	1.00	5.00	150	0.46
Grading (Ph 3.3)	Tractors/Loaders/Backhoes	Diesel	Average	3.00	5.00	84.0	0.41
Grading (Ph 3.3)	Skid Steer Loaders	Diesel	Average	3.00	5.00	71.0	0.38
Grading (Ph 3.3)	Off-Highway Trucks	Diesel	Average	3.00	5.00	350	0.37

Grading (Ph 3.3)	Aerial Lifts	Diesel	Average	3.00	5.00	46.0	0.40
Grading (Ph 3.3)	Dumpers/Tenders	Diesel	Average	2.00	8.00	16.0	0.38
Grading (Ph 3.3)	Sweepers/Scrubbers	Diesel	Average	1.00	5.00	150	0.46
Building (Ph 2.1-2.2)	Generator Sets	Diesel	Average	2.00	5.00	14.0	0.20
Building (Ph 2.1-2.2)	Off-Highway Trucks	Diesel	Average	3.00	5.00	350	0.74
Building (Ph 2.1-2.2)	Cranes	Diesel	Average	1.00	5.00	367	0.29
Building (Ph 2.1-2.2)	Aerial Lifts	Diesel	Average	1.00	5.00	46.0	0.45
Building (Ph 3.1)	Tractors/Loaders/Backhoes	Diesel	Average	8.00	5.00	84.0	0.20
Building (Ph 3.1)	Skid Steer Loaders	Diesel	Average	8.00	5.00	71.0	0.74
Building (Ph 3.1)	Off-Highway Trucks	Diesel	Average	4.00	5.00	350	0.29
Building (Ph 3.1)	Generator Sets	Diesel	Average	8.00	5.00	14.0	0.45
Building (Ph 3.1)	Rubber Tired Loaders	Diesel	Average	4.00	5.00	150	0.37
Building (Ph 3.4)	Off-Highway Trucks	Diesel	Average	1.00	5.00	350	0.20
Building (Ph 3.4)	Generator Sets	Diesel	Average	1.00	5.00	14.0	0.74
Building (Ph 4.1)	Off-Highway Trucks	Diesel	Average	1.00	5.00	350	0.20
Building (Ph 4.1)	Generator Sets	Diesel	Average	1.00	5.00	14.0	0.74
Building (Ph 5.1)	Tractors/Loaders/Backhoes	Diesel	Average	1.00	5.00	84.0	0.20
Building (Ph 5.1)	Skid Steer Loaders	Diesel	Average	1.00	5.00	71.0	0.74
Building (Ph 5.1)	Dumpers/Tenders	Diesel	Average	1.00	5.00	16.0	0.29
Trenching (Ph 3.2)	Excavators	Diesel	Average	1.10	5.00	36.0	0.38
Trenching (Ph 3.2)	Tractors/Loaders/Backhoes	Diesel	Average	1.26	5.00	84.0	0.37
Trenching (Ph 3.2)	Skid Steer Loaders	Diesel	Average	1.26	5.00	71.0	0.37
Trenching (Ph 3.2)	Off-Highway Trucks	Diesel	Average	1.26	5.00	250	0.38
Trenching (Ph 3.2)	Rollers	Diesel	Average	1.10	5.00	36.0	0.38
Trenching (Ph 3.2)	Sweepers/Scrubbers	Diesel	Average	0.84	5.00	250	0.46
Trenching (Ph 3.2)	Dumpers/Tenders	Diesel	Average	0.73	5.00	16.0	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demo (Ph 1.2)	—	—	—	—
Demo (Ph 1.2)	Worker	15.0	11.7	LDA,LDT1,LDT2
Demo (Ph 1.2)	Vendor	—	8.40	HHDT,MHDT
Demo (Ph 1.2)	Hauling	300	20.0	HHDT
Demo (Ph 1.2)	Onsite truck	—	—	HHDT
Initial Site Prep (PH 1.1)	—	—	—	—
Initial Site Prep (PH 1.1)	Worker	55.0	11.7	LDA,LDT1,LDT2
Initial Site Prep (PH 1.1)	Vendor	—	8.40	HHDT,MHDT
Initial Site Prep (PH 1.1)	Hauling	0.00	20.0	HHDT
Initial Site Prep (PH 1.1)	Onsite truck	—	—	HHDT
Grading (Ph 1.3-1.5)	—	—	—	—
Grading (Ph 1.3-1.5)	Worker	17.5	11.7	LDA,LDT1,LDT2
Grading (Ph 1.3-1.5)	Vendor	—	8.40	HHDT,MHDT
Grading (Ph 1.3-1.5)	Hauling	138	20.0	HHDT
Grading (Ph 1.3-1.5)	Onsite truck	—	—	HHDT
Grading (Ph 3.3)	—	—	—	—
Grading (Ph 3.3)	Worker	37.5	11.7	LDA,LDT1,LDT2
Grading (Ph 3.3)	Vendor	—	8.40	HHDT,MHDT
Grading (Ph 3.3)	Hauling	0.00	20.0	HHDT
Grading (Ph 3.3)	Onsite truck	—	—	HHDT
Building (Ph 2.1-2.2)	—	—	—	—
Building (Ph 2.1-2.2)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 2.1-2.2)	Vendor	0.00	8.40	HHDT,MHDT

Building (Ph 2.1-2.2)	Hauling	0.00	20.0	HHDT
Building (Ph 2.1-2.2)	Onsite truck	—	—	HHDT
Building (Ph 3.1)	—	—	—	—
Building (Ph 3.1)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 3.1)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 3.1)	Hauling	0.00	20.0	HHDT
Building (Ph 3.1)	Onsite truck	—	—	HHDT
Building (Ph 3.4)	—	—	—	—
Building (Ph 3.4)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 3.4)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 3.4)	Hauling	0.00	20.0	HHDT
Building (Ph 3.4)	Onsite truck	—	—	HHDT
Building (Ph 4.1)	—	—	—	—
Building (Ph 4.1)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 4.1)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 4.1)	Hauling	0.00	20.0	HHDT
Building (Ph 4.1)	Onsite truck	—	—	HHDT
Building (Ph 5.1)	—	—	—	—
Building (Ph 5.1)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 5.1)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 5.1)	Hauling	0.00	20.0	HHDT
Building (Ph 5.1)	Onsite truck	—	—	HHDT
Trenching (Ph 3.2)	—	—	—	—
Trenching (Ph 3.2)	Worker	18.9	11.7	LDA,LDT1,LDT2
Trenching (Ph 3.2)	Vendor	—	8.40	HHDT,MHDT
Trenching (Ph 3.2)	Hauling	0.00	20.0	HHDT
Trenching (Ph 3.2)	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demo (Ph 1.2)	—	—	—	—
Demo (Ph 1.2)	Worker	15.0	11.7	LDA,LDT1,LDT2
Demo (Ph 1.2)	Vendor	—	8.40	HHDT,MHDT
Demo (Ph 1.2)	Hauling	300	20.0	HHDT
Demo (Ph 1.2)	Onsite truck	—	—	HHDT
Initial Site Prep (PH 1.1)	—	—	—	—
Initial Site Prep (PH 1.1)	Worker	55.0	11.7	LDA,LDT1,LDT2
Initial Site Prep (PH 1.1)	Vendor	—	8.40	HHDT,MHDT
Initial Site Prep (PH 1.1)	Hauling	0.00	20.0	HHDT
Initial Site Prep (PH 1.1)	Onsite truck	—	—	HHDT
Grading (Ph 1.3-1.5)	—	—	—	—
Grading (Ph 1.3-1.5)	Worker	17.5	11.7	LDA,LDT1,LDT2
Grading (Ph 1.3-1.5)	Vendor	—	8.40	HHDT,MHDT
Grading (Ph 1.3-1.5)	Hauling	138	20.0	HHDT
Grading (Ph 1.3-1.5)	Onsite truck	—	—	HHDT
Grading (Ph 3.3)	—	—	—	—
Grading (Ph 3.3)	Worker	37.5	11.7	LDA,LDT1,LDT2
Grading (Ph 3.3)	Vendor	—	8.40	HHDT,MHDT
Grading (Ph 3.3)	Hauling	0.00	20.0	HHDT
Grading (Ph 3.3)	Onsite truck	—	—	HHDT
Building (Ph 2.1-2.2)	—	—	—	—
Building (Ph 2.1-2.2)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 2.1-2.2)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 2.1-2.2)	Hauling	0.00	20.0	HHDT
Building (Ph 2.1-2.2)	Onsite truck	—	—	HHDT

Building (Ph 3.1)	—	—	—	—
Building (Ph 3.1)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 3.1)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 3.1)	Hauling	0.00	20.0	HHDT
Building (Ph 3.1)	Onsite truck	—	—	HHDT
Building (Ph 3.4)	—	—	—	—
Building (Ph 3.4)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 3.4)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 3.4)	Hauling	0.00	20.0	HHDT
Building (Ph 3.4)	Onsite truck	—	—	HHDT
Building (Ph 4.1)	—	—	—	—
Building (Ph 4.1)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 4.1)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 4.1)	Hauling	0.00	20.0	HHDT
Building (Ph 4.1)	Onsite truck	—	—	HHDT
Building (Ph 5.1)	—	—	—	—
Building (Ph 5.1)	Worker	0.00	11.7	LDA,LDT1,LDT2
Building (Ph 5.1)	Vendor	0.00	8.40	HHDT,MHDT
Building (Ph 5.1)	Hauling	0.00	20.0	HHDT
Building (Ph 5.1)	Onsite truck	—	—	HHDT
Trenching (Ph 3.2)	—	—	—	—
Trenching (Ph 3.2)	Worker	18.9	11.7	LDA,LDT1,LDT2
Trenching (Ph 3.2)	Vendor	—	8.40	HHDT,MHDT
Trenching (Ph 3.2)	Hauling	0.00	20.0	HHDT
Trenching (Ph 3.2)	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demo (Ph 1.2)	0.00	0.00	0.00	6,000	—
Initial Site Prep (PH 1.1)	—	—	22.5	0.00	—
Grading (Ph 1.3-1.5)	11,000	—	20.5	0.00	—
Grading (Ph 3.3)	—	—	0.00	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
City Park	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	0.10	0.00	0.00	24.0	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	0.10	0.00	0.00	24.0	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	0.00	0.00	—

5.10.3. Landscape Equipment

Equipment Type	Fuel Type	Number Per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Trimmers/Edgers/Brush Cutters	Electric	0.01	4.00	260	1.13	0.91

5.10.4. Landscape Equipment - Mitigated

Equipment Type	Fuel Type	Number Per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Trimmers/Edgers/Brush Cutters	Electric	0.01	4.00	260	1.13	0.91

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	600,000	204	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
City Park	600,000	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
City Park	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	0.52	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
City Park	0.52	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	7.80	annual days of extreme heat
Extreme Precipitation	5.35	annual days with precipitation above 20 mm
Sea Level Rise	1.90	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	2	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	2	1	1	3
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A

Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	6.38
AQ-PM	27.0
AQ-DPM	93.5
Drinking Water	4.21
Lead Risk Housing	80.9
Pesticides	0.00
Toxic Releases	61.7
Traffic	84.0
Effect Indicators	—
CleanUp Sites	90.4
Groundwater	97.4
Haz Waste Facilities/Generators	94.1
Impaired Water Bodies	87.0
Solid Waste	99.0

Sensitive Population	—
Asthma	82.1
Cardio-vascular	58.3
Low Birth Weights	89.3
Socioeconomic Factor Indicators	—
Education	65.7
Housing	52.1
Linguistic	56.9
Poverty	49.1
Unemployment	28.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	41.71692545
Employed	41.16514821
Median HI	38.4832542
Education	—
Bachelor's or higher	37.61067625
High school enrollment	100
Preschool enrollment	50.42987296
Transportation	—
Auto Access	43.30809701
Active commuting	81.6501989
Social	—
2-parent households	22.43038624

Voting	50.46836905
Neighborhood	—
Alcohol availability	30.15526755
Park access	46.99088926
Retail density	81.49621455
Supermarket access	65.50750674
Tree canopy	46.49044014
Housing	—
Homeownership	29.00038496
Housing habitability	56.17862184
Low-inc homeowner severe housing cost burden	47.44001027
Low-inc renter severe housing cost burden	73.84832542
Uncrowded housing	41.35762864
Health Outcomes	—
Insured adults	27.75567817
Arthritis	32.0
Asthma ER Admissions	19.0
High Blood Pressure	58.0
Cancer (excluding skin)	47.4
Asthma	46.1
Coronary Heart Disease	40.3
Chronic Obstructive Pulmonary Disease	37.6
Diagnosed Diabetes	34.4
Life Expectancy at Birth	47.0
Cognitively Disabled	33.5
Physically Disabled	57.4
Heart Attack ER Admissions	33.6

Mental Health Not Good	43.4
Chronic Kidney Disease	35.4
Obesity	53.5
Pedestrian Injuries	19.6
Physical Health Not Good	39.2
Stroke	34.3
Health Risk Behaviors	—
Binge Drinking	81.4
Current Smoker	41.5
No Leisure Time for Physical Activity	34.1
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	21.2
Children	81.0
Elderly	59.3
English Speaking	28.9
Foreign-born	76.0
Outdoor Workers	44.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	36.8
Traffic Density	91.9
Traffic Access	23.0
Other Indices	—
Hardship	62.4
Other Decision Support	—
2016 Voting	30.1

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	87.0
Healthy Places Index Score for Project Location (b)	48.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Activities related to development of an irrigated feature per BAAQMD CEQA Guidelines, Table 2 of Appendix D
Operations: Architectural Coatings	No architectural coatings for the project
Operations: Refrigerants	No such features
Construction: Dust From Material Movement	becuase
Construction: Off-Road Equipment	Per construction phase estimates provided by Terraphase
Operations: Consumer Products	No consumer products or parking degreaser associated with this project as parking is part of the existing facility and not a component of this project.

Operations: Energy Use	MABR system usage
Operations: Water and Waste Water	No outside water usage
Operations: Landscape Equipment	Per planned maintenance
Operations: Solid Waste	Per engineers

APPENDIX A: BIOLOGICAL RESOURCES HABITAT ASSESSMENT

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

April 17, 2020

Hayes Morehouse
Administrative Analyst II
City of San Leandro
Public Works, Water Pollution Control Plant
3000 Davis Street
San Leandro, California 94577

Subject: Biological Resources Habitat Assessment
San Leandro Treatment Wetland Project, Alameda County, California

Dear Mr. Morehouse:

LSA submits this biological resources habitat assessment for the above-referenced project. The proposed project would convert an existing 4.3-acre basin historically utilized for wet weather storage to a multi-benefit wastewater treatment and shoreline resiliency project. Polished wastewater will discharge directly to the San Francisco Bay at the existing outfall located at the western edge of the existing basin. The primary objective of the assessment is to analyze the potential for the proposed project to adversely impact State-listed species and other special-status species. This assessment is based on the review of data base searches, LSA's reconnaissance-level field survey, and our project experience with biological resource issues in the vicinity.

METHODS

LSA Senior Biologists Dan Sidle and Bernard Warzecha conducted a reconnaissance-level survey of the project site on February 5, 2020 to evaluate the potential occurrence of special-status species and sensitive habitats on the site. Prior to conducting the survey, LSA biologist reviewed available background information/literature and searched the records of the *California Natural Diversity Database* (CNDDB; CDFW 2020), *Inventory of Rare and Endangered Plants* (CNPS 2020), and the U.S. Fish and Wildlife Service's *Information for Planning and Consultation (IPaC)* on-line database (USFWS 2020) for occurrences of special-status plant and wildlife species on or adjacent to the project site. We surveyed the project site by walking throughout the site to search for biological resources, such as special-status plants, animals, and their habitats, as well as sensitive habitats, such as wetlands or drainages. The potential presence of special-status species was determined based on an evaluation of the habitat types present on the site, the CNDDB records, and other occurrence information from the vicinity of the site. During the field survey, LSA also investigated the site for the presence of waters of the United States/Waters of the State (including adjacent wetlands) that would be subject to regulation under Section 404 of the Clean Water Act and/or the California Porter-Cologne Water Quality Control Act.

The scientific and vernacular nomenclature for the plant and wildlife species used in this analysis are from the following standard sources: plants, Baldwin et al. (2012) and updates listed on the Jepson Herbarium website (ucjeps.berkeley.edu/eflora); amphibians and reptiles, Crother (2017) and/or

AmphibiaWeb (www.amphibiaweb.org); birds, American Ornithologists' Union (1998) and supplements through 2020; and mammals, Bradley et al. (2014).

HABITAT/LAND COVER TYPES

The project site includes a 4.3-acre storage basin and adjacent upland areas owned by the City and managed by the San Leandro WPCP (Figures 1 and 2). The triangular-shaped basin is located at the western end of the WPCP and the drainage channel to the east (Figures 2 and 3). The basin is bordered on the south and east by a tidal slough with direct connection to San Francisco Bay, and on the north by the Oakland International Airport and the Metropolitan Golf Links course. The San Francisco Bay Trail runs along the northwest edge of the basin. Other surrounding land uses include a gun club (property owned by the City), a waste transfer facility, and the Oyster Bay Regional Shoreline Area, which is a 194-acre Regional Park operated by East Bay Regional Park District. The storage basin maintains the physical appearance of an active salt pond, which is void of vegetation in all areas except the perimeter of the basin with plant assemblages consistent with other heavily disturbed sites along the San Francisco Bay. Soils on the project site are mapped as *Xeropsamments, fill* and *Xerorthents, clayey* (UC Davis SoilWeb 2020).

Vegetation

Vegetation within the project site includes salt marsh vegetation along the tidal slough and basin, and trees, shrubs, and ruderal (weedy) plants along the banks of the basin, levee, and access road that surrounds the basin. Trees growing on the site consist of primarily ornamental species, such as acacia (*Acacia* sp.) and olive (*Olea europaea*), but at least one small native coast live oak (*Quercus agrifolia*) and native willow (*Salix* sp.) were observed along the bank of the basin. Shrubs observed include coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), Himalayan blackberry (*Rubus armeniacus*), and various ornamental shrubs. The non-native ruderal and annual grassland vegetation includes several grasses and forbs, such as pampas grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), wild oats (*Avena* sp.), brome (*Bromus* sp.), Italian rye grass (*Festuca perennis*), bristly ox-tongue (*Helminthotheca echioides*), cheeseweed (*Malva parviflora*), and short-pod mustard (*Hirschfeldia incana*). A small patch of native blue wild rye (*Elymus glaucus*) was also observed along the upper bank of the slough. Table A lists the plant species observed during LSA's surveys.

Vegetation is sparse within the tidal slough and lower banks of the levee. Plants observed along the tidal slough consists of: pickleweed (*Salicornia pacifica*), fleshy jaumea (*Jaumea carnosa*), and cordgrass (*Spartina* sp.) along the lower tidal zone; saltgrass (*Distichlis spicata*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*) along the middle tidal zone; and upland vegetation, such as pampas grass, fennel, and coyote brush, along the top of the levee.

Wildlife

The project site provides suitable nesting and foraging habitat for several bird species. Birds, such as California towhee (*Melozone crissalis*) and northern mockingbird (*Mimus polyglottos*), could nest in the trees and shrubs on and adjacent to the site. Wildlife species or wildlife sign observed within or adjacent to the project site during the field survey consisted of the aforementioned California towhee and northern mockingbird, as well as western fence lizard (*Sceloporus occidentalis*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*) burrows, raccoon (*Procyon lotor*) tracks, and numerous bird species (Table B).

SPECIAL-STATUS SPECIES

For the purposes of this assessment, special-status species are defined as follows:

- Species that are listed, formally proposed, or designated as candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA);
- Species that are listed, or designated as candidates for listing, as rare, threatened, or endangered under the California Endangered Species Act (CESA);
- Plant species that are on the California Rare Plant Rank Lists 1A, 1B, and 2;
- Animal species that are designated as Species of Special Concern or Fully Protected by California Department of Fish and Wildlife (CDFW); or
- Species that meet the definition of rare, threatened, or endangered under Section 15380 of the CEQA guidelines.

Special-Status Plant Species

Several CNDDB occurrences of special-status plant species have been recorded within 5 miles of the project site (CDFW 2020), but the project site does not support suitable habitat for special-status plants due to prior disturbance at the site and the introduction of non-native plant species.

Special-Status Animal Species

Special-status animal species that are known to occur in the vicinity of the site and for which suitable habitat may be present includes the white-tailed kite (*Elanus leucurus*; California Fully Protected), which could nest in the trees and large shrubs within or adjacent to the project site, the Alameda song sparrow (*Melospiza melodia pusillula*; California Species of Special Concern), which could occur within the dense vegetation along the perimeter of the project site, and the pallid bat (*Antrozous pallidus*; California Species of Special Concern), which could roost in the structures on or adjacent to the project site. Other special-status species could also occur at the site, such as salt marsh wandering shrew (*Sorex vagrans haliocoetes*) and western snowy plover (*Charadrius alexandrines nivosus*), as well as steelhead (*Oncorhynchus mykiss*), green sturgeon (*Acipenser medirostris*), white sturgeon (*Acipenser transmontanus*), longfin smelt (*Spirinchus thaleichthys*), and Pacific lamprey (*Entosphenus tridentatus*) within the tidal slough during higher tides.

Special-Status Birds

The white-tailed kite and Alameda song sparrow were observed on the project site and could nest within or near the work area, while other special-status birds could forage and/or nest at or near the site (Table A). The burrowing owl (*Athene cunicularia*) and loggerhead shrike (*Lanius ludovicianus*) could nest and/or forage at the site. Other special-status birds could forage or briefly fly through the site, but would likely not nest at the site due to the lack of suitable habitat or because the species' nesting range is outside the project area. These species consist of the western snowy plover (*Charadrius alexandrines nivosus*), California black rail (*Laterallus jamaicensis coturniculus*), California Ridgway's rail (*Rallus obsoletus obsoletus*), northern harrier (*Circus hudsonius*), San Francisco (saltmarsh) common yellowthroat (*Geothlypis trichas sinuosa*), tricolored blackbird (*Agelaius tricolor*), redhead (*Aytha americana*), Barrow's goldeneye (*Bucephala islandica*), American white pelican (*Pelecanus erythrorhynchos*), California brown pelican (*Pelecanus occidentalis californicus*), California least tern (*Sterna antillarum browni*), American peregrine falcon (*Falco peregrinus anatum*), short-eared owl (*Asio flammeus*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and yellow warbler (*Setophaga petechia*).

Special-Status Fish

Several special-status fish species are known to inhabit the San Francisco Bay and could briefly forage within the tidal slough. These fish species consist of the longfin smelt (*Spirinchus thaleichthys*), Pacific lamprey (*Entosphenus tridentatus*), North American green sturgeon (*Acipenser medirostris*), white sturgeon (*Acipenser transmontanus*), steelhead (*Oncorhynchus mykiss*), chinook salmon (*O. tshawytscha*), and coho salmon (*O. kisutch*). No suitable spawning or rearing habitat is present within the tidal slough for these fish species, but these species could occur in the slough during higher tides. Additionally, no historical occurrences of longfin smelt have been recorded as part of the San Francisco Bay Study at the CDFW survey stations near the project site (CDFW 2018). Restricting in-water work involving the maintenance of the outfall during periods of low tides or installing a cofferdam around the work area for outfall modification or replacement would avoid potential impacts to these special-status fish.

Salt Marsh Wandering Shrew

The project site contains limited suitable habitat for the salt marsh wandering shrew, which is a California Species of Special Concern. Impacts to this species, if present, could occur in the form of direct mortality. In addition, indirect impacts may occur with implementation of the proposed project as a result of increased noise or human activity during construction. In order to minimize potential impacts to salt marsh wandering shrew during construction, recommended mitigation measures (see below) would require the installation of exclusion fencing around the entire portion of the work area prior to construction activities and require a biological monitor to be present during initial habitat disturbance. Therefore, with implementation of the recommended mitigation measures, potential construction-related impacts to salt marsh wandering shrew would be minimized.

Pallid Bat and Other Special-Status Bats

The pallid bat (*Antrozous pallidus*) is a California Species of Special Concern that could roost in the structures on or adjacent to the project site. Suitable roosting habitat may be present in the concrete vault box located near the southwestern corner of the basin, but no bats or evidence of roosting were detected during the survey.

RECOMMENDED MITIGATION MEASURES

LSA recommends the following specific mitigation measures be implemented to ensure impacts to biological resources are avoided and minimized:

Nesting Birds

The project shall avoid construction activities during the bird nesting season (February 1 through August 31). If construction activities are scheduled during the nesting season, a qualified biologist shall conduct a pre-construction survey of all suitable nesting habitat (i.e., grassland, trees, shrubs, gravel roads, buildings) within 250 feet of the project site (where accessible). The pre-construction survey shall be conducted no more than 14 days prior to the start of work. If the survey indicates the presence of nesting birds, protective buffer zones shall be established around the nests as follows: for raptor nests, the size of the buffer zone shall be a 250-foot radius centered on the nest; for other birds, the size of the buffer zone shall be a 50 to 100-foot radius centered on the nest. In some cases, these buffers may be increased or decreased depending on the bird species and the level of disturbance that will occur near the nest.

Roosting Bats

A qualified biologist shall conduct a pre-construction survey for roosting bats at all suitable bat roosting habitat (large trees, concrete vault box) within the project area within 14 days prior to the beginning of project-related activities. If active bat roosts are discovered or if evidence of recent prior occupation is established, a buffer shall be established around the roost site until the roost site is no longer active. If an active bat roost needs to be removed as part of the proposed project, the project biologist would need to consult CDFW to determine appropriate methods for the removal of the roost. As part of CDFW's approval, a new roost site may need to be created on the project site as mitigation.

Salt Marsh Wandering Shrew

The following mitigation measures are recommended in order to avoid potential impacts to salt marsh wandering shrew:

- A CDFW-approved biologist shall conduct a pre-construction survey for the salt marsh wandering shrew at the appropriate time of day within the work area within 48 hours prior to the commencement of construction activities. The survey shall entail the biologist walking the work area limits to determine the possible presence of shrews. The biologist shall investigate all potential areas that may be utilized by this species for breeding, sheltering, movement, and other essential behaviors. A CDFW-approved biologist shall be present during all project related activities that may impact the salt marsh wandering shrew or its habitat.

- Prior to vegetation removal, upland portions of the site shall be mowed for the purpose of removing cover and encouraging salt marsh wandering shrew to seek cover in the areas outside of the construction area.

- After vegetation is removed, silt exclusion fencing with wire-mesh backing shall be installed by hand around the construction area to prevent salt marsh wandering shrew from entering the active work area, to protect adjacent habitat from construction activities or accidental spills, and to exclude workers from adjacent habitat.

- If a salt marsh wandering shrew is observed in or near the project area, all construction shall cease until the salt marsh wandering shrew is captured by a CDFW-approved biologist possessing the appropriate permits and relocated to other suitable habitat on the project site in accordance with a pre-approved Sensitive Species Relocation Plan (SSRP). A brief SSRP shall be submitted to and approved by the CDFW and USFWS prior to the commencement of any project activities.

- The area beneath vehicles or equipment parked in the project area shall be checked for the presence of salt marsh wandering shrew before being moved, during construction, and during movement of staging materials within the entire project site.

- Vehicle speed limits on the project site shall not exceed 10 miles per hour.

Special-Status Fish and Tidal Slough Habitat

In the preferred scenario, where the existing outfall may be utilized, subject to minor maintenance, the following mitigation measure shall be implemented:

To minimize impacts to fish species and aquatic habitat, all proposed outfall maintenance shall be conducted at low tide, when the existing outfall and surrounding mudflat are exposed. Additionally, pipeline maintenance shall occur during June to July, which falls within the summer work windows designated by the National Marine Fisheries Service (NMFS) to minimize impacts on aquatic species. Only the removal of the excess sediment from the outfall pipes and the possible installation of a structural liner inside the pipelines would take place within an intertidal aquatic environment, below the Mean Higher High Water (MHHW) line.

In the event that outfall needs to be replaced or retrofitted, a cofferdam shall be installed between the bank where the outfall work will occur and the edge of the tidal slough. The cofferdam shall be made of sand bags, clean gravel bags, sheet piles, or other suitable material and shall be installed to isolate the immediate work area from the rest of the tidal slough, as well as prevent sediment from flowing into the slough and from fish entering the work area. The cofferdam shall be repaired or replaced as needed to remain effective. Soil/silt build up behind the cofferdam shall be promptly removed and any undermined areas or breaches shall be repaired immediately.

If a cofferdam is required for the outfall work and if handling or salvaging of fish trapped in the cofferdam is necessary, the biologist shall always wet hands and nets prior to touching fish to ensure the slime coating on the fish is protected. Captured fish shall be placed in buckets filled with clean cool water and released in the tidal slough outside of the cofferdam. A minimum of two buckets shall be available so juveniles (young-of-the-year) can be segregated form larger age-classes to avoid predation.

Environmental Training

Prior to initiation of construction activities (including staging of equipment), all personnel associated with project activities shall attend an Environmental Awareness Training. The training shall be prepared and conducted by a qualified biologist to aid workers in protecting special-status species, such as salt marsh wandering shrew, western snowy plover, fish, and other special-status species that may be present in the vicinity of the work area. This program shall include identification of protected wildlife and habitats, a description of the regulatory status, and review of measures being implemented to reduce impacts to special-status species. Each worker shall be given a handout with key points. At the end of the training, all workers shall sign a form to document their participation in the program and understanding of the measures.

Temporary Exclusion Fencing

Prior to ground disturbance, exclusion fencing shall be installed around the entire portion of the treatment wetland work area to exclude salt marsh wandering shrew and other wildlife species from entering the area. The fence shall be made of a material that does not allow shrews and other wildlife to pass through or over and the bottom shall be buried to a depth of 2 inches so that shrew cannot crawl under the fence except in situations where burial of the fence would significantly affect other species.

After the fencing is installed, all ground vegetation within the fenced area shall be cleared. Construction work shall start as soon as possible (and no longer than one week) after vegetation has been cleared. All exclusion measures and initial ground disturbance activities shall be monitored by a qualified biologist as outlined above. Any soil/debris build up behind the fence shall be promptly removed and any undermined areas or breaches shall be repaired immediately.

Biological Monitoring

At least 15 days prior to the onset of work activities, the applicant shall submit the name(s) and credentials of the biologist(s) proposed to serve as biological monitor(s) for the proposed project to the U.S. Fish and Wildlife Service (USFWS), NMFS, and/or CDFW. A qualified biologist shall be on site during the initial vegetation clearing/grubbing and the installation of the exclusion fencing and to confirm that avoidance measures have been implemented. The qualified biologist shall communicate with construction personnel and have authority to make sure all mitigation measures are properly implemented. The biologist shall also have the authority to stop project activities if there is a risk of impacts to any special-status species. If the biologist stops work, CDFW, USFWS, and/or NMFS will be contacted by telephone within 24 hours.

If the outfall needs to be replaced/retrofitted and a cofferdam is needed, a qualified biologist shall be present to monitor and approve the installation of temporary exclusion fencing and cofferdam, as well as other avoidance measures. The biologist shall be present during all initial vegetation clearing and in-water work at the tidal slough.

Once exclusion fencing and cofferdam have been erected and all work activity is confined to the work site, the biologist may be absent as long as no construction activities occur outside of the work site. The biologist shall visit the site as needed to ensure the exclusion fencing and cofferdam are properly maintained and working. The biologist shall have authority to halt the project, if necessary. The biologist shall document all work by completing monitoring forms and preparing a summary report that shall be retained for potential submittal to USFWS, NMFS, and/or CDFW and other regulatory agencies as necessary, pending any permit requirements.

PERMITTING

Depending if the existing outfall is replaced, retrofitted, or maintained (i.e., sediment removal), a U.S. Army Corps of Engineers Nationwide Permit and Regional Water Quality Control Board Water Quality Certification may be required for the project. Fish and Game Code section 1602 applies to any river, lake, or stream, including those that are perennial, intermittent, or ephemeral. The existing storage basin would not fall under the jurisdiction of CDFW since it is not a lake or stream that is connected to a water body that falls under the jurisdiction of CDFW. Rather, the storage basin is constructed, and actively used and maintained as part of the WPCP. The existing outfall and the tidal slough would not fall under the jurisdiction of CDFW because the slough is a tidal feature that is part of the San Francisco Bay, which is not a river, lake, or stream. Since the proposed project will not impact the north-south flowing tidal channel east of the basin and since the basin and the tidal slough do not fall under the jurisdiction of CDFW, no Section 1602 Lake or Streambed Alteration Agreement should be required for the project.

Please contact me at dan.sidle@lsa.net or Ross Dobberteen, Principal-in-Charge, at ross.dobberteen@lsa.net, if you have questions and/or require further information regarding this biological resources habitat assessment.

LSA ASSOCIATES, INC.

Sincerely,

Dan Sidle
Associate/Senior Biologist

Attachments: Figures 1-3
Table A: Special-Status Species Evaluated for the Project
Table B: Plant Species Observed at the Project Site, February 5, 2020
Table C: Wildlife Species Observed at the Project Site, February 5, 2020

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FIGURE 1

0 2000 4000
FEET

SOURCE: Esri World Street Map (03/2020).

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Project Area Location

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Action Area

Project Site

0 75 150

FEET

FIGURE 2

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Action Area

SOURCE: Towill (01/2020); USGS LiDAR (11/2010); Alameda County LiDAR (07/2006);Google Maps Sat Aerial (04/2019).

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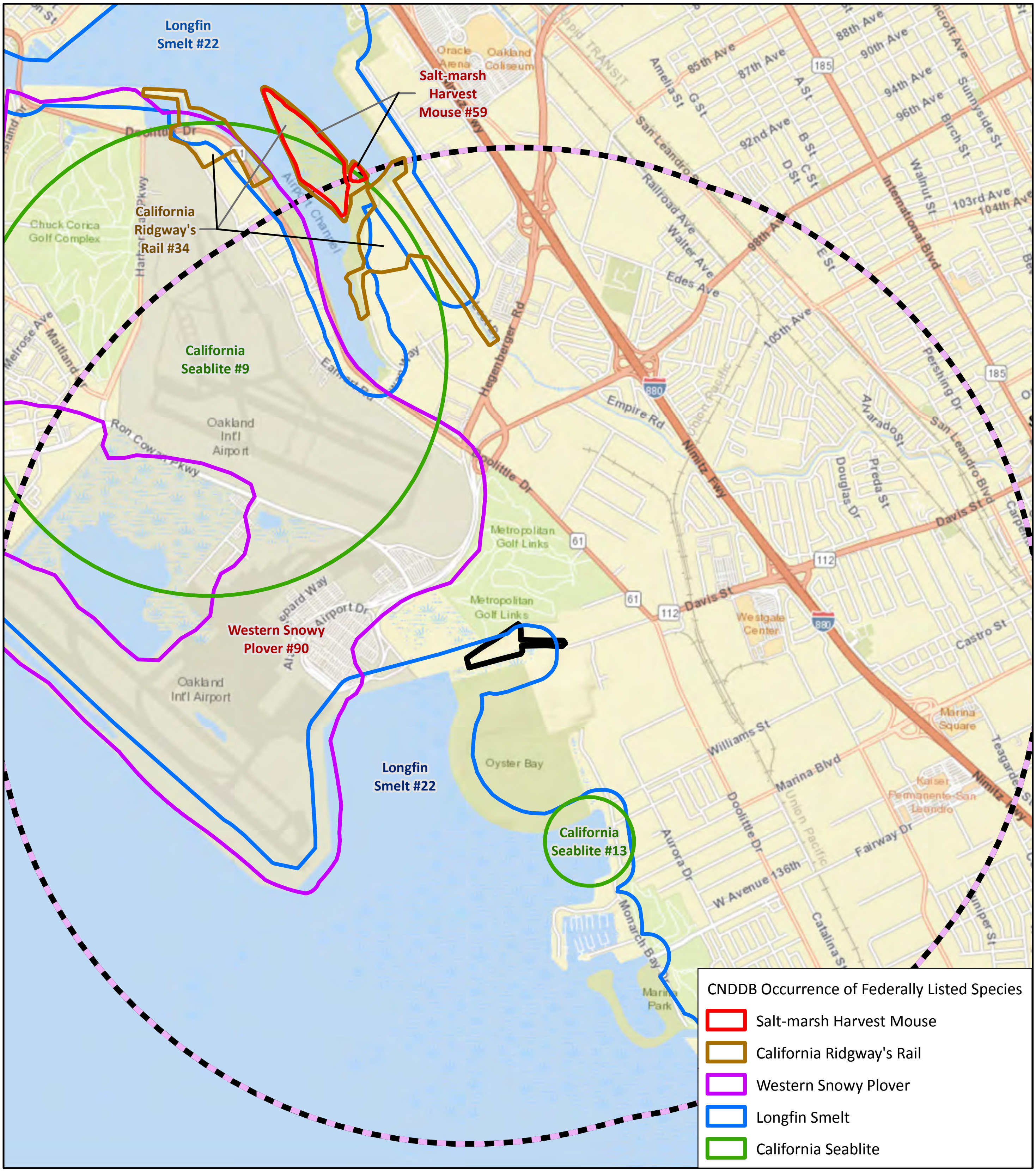

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San Leandro Water Wetlands-Survey Limits

2-mile Buffer of Action Area

N

0 1500 3000

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FIGURE 3

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

CNDDB Occurrences of Federally Listed Species within 2 Miles of the Action Area

SOURCE: CDFW CNDDB (02/2020); ESRI World Street Map.

I:\TER2001\GIS\Maps\BA\Figure 3_CNDDB Occurrences of Federally Listed Species within 2 Miles.mxd (3/5/2020)

Table A: Special-Status Species Evaluated for the Project Site

Species	Status (Federal/State)	Habitat	Potential for Occurrence[a]
Invertebrates			
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE/–	Located on steep, north facing slopes within the fog belt in coastal, mountainous areas with grassy ground cover; mainly in the vicinity of San Bruno Mountain, San Mateo County; *Sedum spathulifolium* is the larval host plant.	No suitable habitat is present. No CNDDB occurrences within 5 miles.
Monarch Butterfly *Danaus plexippus* California Overwintering Population	Sensitive (S2S3)	Winter colony sites occur along the California coast in wind protected tree groves (eucalyptus, Monterey pine, and cypress) where nectar and water resources are nearby.	No suitable habitat present at the project site. No CNDDB occurrences within 5 miles.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/–	Endemic to the grasslands of the Central Valley, and central and south coast mountains in small, clear water sandstone-depression and grassed swale, earth slump, or basalt-flow depression rain-filled pools.	No suitable habitat including seasonal wetlands is present. No CNDDB occurrences within 5 miles.
Fish			
Delta smelt *Hypomesus transpacificus*	FT/–	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay; seldom found at salinities greater than 10 ppt; most often at salinities less than 2ppt.	Project site is outside of known range for species.
Longfin smelt *Spirinchus thaleichthys*	FC/ST, SSC	Open waters of estuaries, mostly in the middle or bottom water column. Prefers salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	The tidal slough and surrounding harbor are not known as breeding grounds for this species. Species detected in the Oakland Harbor in 2005 (CDFW 2020) and could occur in the tidal slough. No historical occurrences have been recorded as part of the San Francisco Bay Study at the CDFW survey stations near the project site (CDFW 2018). The CNDDB maps the onsite tidal slough as part of occurrence #22 for longfin smelt (CDFW 2020).
Tidewater goby *Eucyclogobius newberryi*	FE/SSC	Shallow brackish lagoons and low gradient stream reaches with aquatic vegetation and areas of open bottom; most common in the upstream portions of lagoons with barrier beaches. Generally not found in lagoons with open mouths and strong tidal flow. Favors low salinity, generally less than 10 parts per thousand (ppt).	Species is considered extinct from the San Francisco Bay (Moyle 2002).

Species	Status (Federal/State)	Habitat	Potential for Occurrence[a]
North American green sturgeon (southern DPS) *Acipenser medirostris*	FT/–	Near shore marine waters, bays and estuaries, spawns in rivers in deep fast water over large cobbles, but also clean sand to bedrock. Southern most spawning population in the Sacramento River.	Potential foraging habitat is present in the tidal slough, but spawning habitat is absent. Critical Habitat has been designated in the San Francisco Bay, but not all of the primary constituent elements (food resources, water flow to migrate upstream to spawning grounds, water quality, migratory corridor, depth, sediment quality) are present within the slough.
White sturgeon *Acipenser transmontanus*	–/SSC	Estuaries, including the San Francisco Bay, but spawn in large rivers; only known to spawn in the Sacramento River system, Columbia River in Washington, and Fraser River in Canada.	Potential foraging habitat is present in the tidal slough, but does not spawn with the tidal sloughs of San Francisco Bay. Known to occur in San Francisco Bay (Moyle 2012; Leidy 2007).
Pacific lamprey *Entosphenus tridentatus*	–/SSC	Coastal streams and estuaries, including the San Francisco Bay; spawns in higher-gradient, cool-water streams with gravel beds.	Potential foraging habitat is present in the tidal slough, but spawning habitat is absent. Known to occur in San Francisco Bay (Moyle 2012; Leidy 2007).
Steelhead (Central California coast DPS) *Oncorhynchus mykiss*	FT/–	Coastal streams from Russian River south to Aptos Creek (Santa Cruz Co.), including streams tributary to San Francisco and San Pablo Bays.	Although suitable spawning habitat is absent in the slough, occasional stray individuals could occur. Critical Habitat has been designated in the San Francisco Bay, but the primary constituent elements (spawning and rearing habitat, etc.) are not present within the slough.
Steelhead (Central Valley DPS) *Oncorhynchus mykiss*	FT/–	Sacramento and San Joaquin Rivers and their tributaries.	Although suitable spawning habitat is absent in the slough, occasional stray individuals could occur.
Chinook salmon (Central Valley spring-run ESU) *Oncorhynchus tshawytscha*	FT/–	Anadromous: spawns in Sacramento River system; occurs in small numbers in Central Bay.	Although suitable spawning habitat is absent in the slough, occasional stray individuals could occur.
Chinook salmon (Sacramento River winter-run ESU) *Oncorhynchus tshawytscha*	FE/–	Anadromous: spawns in Sacramento River system; occurs in small numbers in Central Bay.	Although suitable spawning habitat is absent in the slough, occasional stray individuals could occur.
Coho salmon - central California coast ESU *Oncorhynchus kisutch*	FE/SE	Anadromous: spawns in coastal streams in fall and winter.	Although suitable spawning habitat is absent in the slough, occasional stray individuals could occur.
Amphibians			
California red-legged frog *Rana draytonii*	FT/–	Creeks, ponds, marshes. Prefers aquatic habitat with deep (2 feet or deeper) areas with undercut banks, emergent aquatic vegetation, and bank cover. Does not occur in salt marshes or wetland with brackish water.	No suitable habitat is present. The isolation of the project site from nearby areas of occurrence by heavily traveled roadways, developed landscapes, and marine waters, and salt marsh (all barriers to dispersal for frogs) would preclude dispersing individuals from reaching the project site.

Species	Status (Federal/State)	Habitat	Potential for Occurrence[a]
California tiger salamander *Ambystoma californiense*	FT/ST	Annual grasslands and valley-foothill oak savannah with vernal pools or other temporary water bodies (e.g., stock ponds) for breeding. During the non-breeding season occupies the burrows of California ground squirrels and Botta's pocket gophers.	No suitable breeding or upland habitat is present on or adjacent to the project site. The isolation of the site from nearby areas of occurrence by heavily traveled roadways, developed landscapes, marine waters, and salt marsh (all barriers to dispersal for salamanders) would preclude dispersing individuals from reaching the site.
Reptiles			
Western pond turtle *Emys marmorata*	–/SSC	Wide variety of freshwater habitats with deep water, including slow flowing pools of rivers and streams, ponds, and marshes. Aquatic habitats with a muddy or sand bottom, but also occurs in areas with a rocky or cobble bottom. Generally most common in areas with abundant basking habitat such as fallen trees. Must have access to upland areas with friable soils for egg laying.	No suitable habitat present. This species is known from nearby freshwater habitats, but does not occur in salt water estuaries, bays or other marine habitats. No suitable habitat present in the basin or tidal slough.
Alameda whipsnake *Masticophis lateralis*	FT/ST	Chaparral and sage scrub with rock outcrops and an abundance of prey species, such as western fence lizard (*Sceloporus occidentalis*).	No suitable habitat present. The isolation of the project site, from known CNDDB occurrences approximately 4.5 miles to the northeast, by heavily traveled roadways, urban development, and open water (all barriers to dispersal for snakes) would preclude dispersing individuals from reaching the project site.
Birds			
Redhead *Aytha americana*	–/SSC	Large, deep bodies of water; nests in freshwater emergent wetlands.	Could forage in open water habitat within the slough; does not breed in Bay Area. Species observed at Oyster Bay and Oyster Bay Regional Shoreline (eBird 2020).
Barrow's goldeneye *Bucephala islandica*	–/SSC	Protected coastal and open inland waters.	Could forage in open water habitat within the slough; does not breed in Bay Area. Species observed at the Oyster Bay Regional Shoreline (eBird 2020).
American white pelican *Pelecanus erythrorhynchos*	–/SSC	Shallow inland and coastal marine habitats, marshes, lakes, rivers.	Could forage in open water habitat within the project site; does not breed in Bay Area. Species observed at the Oakland International Airport and Oyster Bay Regional Shoreline (eBird 2020).

Species	Status (Federal/State)	Habitat	Potential for Occurrence[a]
California brown pelican *Pelecanus occidentalis californicus*	Delisted/ Delisted, SFP	Open marine waters with abundant small schooling fish populations, nests on islands lacking terrestrial predators, roosts on isolated islands, rocks, breakwaters, and docks.	Could forage in open water habitat within the project site; does not breed in Alameda County, but post breeding adults and young birds disperse north from the Channel Islands in southern California (the closest breeding area) and are most abundant in the County from July through late October. However, within the project area, there may be small numbers of non-breeding individuals present all year. Species observed at the Oakland International Airport and Oyster Bay (eBird 2020).
Western snowy plover *Charadrius alexandrines nivosus*	FT/SSC	Sandy beaches, salt pond levees and shores of large alkali lakes. Need sandy, gravelly or friable soils for nesting.	No suitable breeding habitat present along the tidal slough. Not likely to nest in the basin due to limited suitable habitat and long period in which the basin is inundated with water. Could briefly fly through or forage at the project site. Closest breeding occurrence is a 1979 record approximately 0.3 mile from the site at Bay Farm Island (CDFW 2020). Species observed at the Oyster Bay Regional Shoreline in January 1984 (eBird 2020). Species has been recorded at the Oakland International Airport (Bloom, pers. comm.).
California least tern *Sterna antillarum browni*	FE/SE, SFP	Coastal waters, sandy beaches, alkali flats, and hard-pan surfaces (salt ponds).	No suitable breeding habitat present. Could briefly fly through or forage over the open water in the slough. Closest CNDDB occurrence is approximately 2.5 miles from the site at the Oakland Airport. Species observed at the Oakland International Airport, Oyster Bay, and Oyster Bay Regional Shoreline (eBird 2020).
White-tailed kite *Elanus leucurus*	–/SFP	Nests in shrubs and trees in open areas and forages in adjacent grasslands and agricultural land.	Suitable nesting habitat present in the trees on and adjacent to the site. Species observed at project site during LSA's field survey. No CNDDB occurrences within 5 miles of the project site.
Northern harrier *Circus hudsonius*	–/SSC	Nests on the ground among tall vegetation in grasslands, grain fields, sagebrush flats, and emergent wetlands along rivers or lakes.	No suitable nesting habitat present. Could forage over or adjacent to the project site. Species observed at the Davis Street dump, Oakland International Airport, and Oyster Bay Regional Shoreline (eBird 2020).
American peregrine falcon *Falco peregrinus anatum*	Delisted/ Delisted/ SFP	Forages in open country, mountains and sea coasts. Nests on high cliffs, bridges, and buildings.	No suitable nesting habitat present; could briefly fly over or forage at the site. Species observed at the Oyster Bay Regional Shoreline (eBird 2020).
California black rail *Laterallus jamaicensis coturniculus*	–/ST, SFP	Salt marshes bordering larger bays, also found in brackish and freshwater marshes.	No suitable habitat present. Closest CNDDB occurrence is a 1995 record at Arrowhead Marsh, approximately 1.9 miles from the project site.

Species	Status (Federal/State)	Habitat	Potential for Occurrence[a]
California Ridgway's rail *Rallus obsoletus obsoletus*	FE/SE, SFP	Tidal salt marshes with sloughs and substantial cordgrass (*Spartina* sp.) cover	No suitable habitat present. Only limited patches of cordgrass present along slough. No cordgrass or pickleweed present at outfall. Closest CNDDB occurrence is a 2015 record at Arrowhead Marsh, approximately 1.2 miles from the project site. Species observed at the Oyster Bay Regional Shoreline in March 2007 (eBird 2020).
Short-eared owl *Asio flammeus*	–/SSC	Upland areas of fresh and salt marshes, moist grasslands, irrigated alfalfa fields. Roosts and nests on the ground in areas concealed by tall grass. Not expected to nest.	May forage at the project site as a rare winter visitor and fall migrant.
Burrowing owl *Athene cunicularia*	–/SSC	Open, dry grasslands that contain abundant ground squirrel burrows.	May forage or winter at the project site, but species not known to breed in the area (CDFW 2020). Suitable burrow surrogates may be present in rock rip-rap and California ground squirrel burrows along the perimeter of the basin. Closest CNDDB occurrence is a 1983 record approximately 1.7 miles from the project site. Species observed nearby at the Metropolitan Golf Links golf course and Oyster Bay Regional Shoreline (eBird 2020).
Loggerhead shrike *Lanius ludovicianus*	–/SSC	Grasslands and open shrub or woodland communities; nests in dense shrubs or trees and forages in scrub, open woodlands, grasslands, and croplands.	May forage and nest at or adjacent to the project site. Species observed at the Oyster Bay Regional Shoreline in January 1984 (eBird 2020).
Yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/SE	Wooded habitat with dense cover along streams and marshes.	No suitable habitat present.
Bryant's savannah sparrow *Passerculus sandwichensis alaudinus*	–/SSC	Nests and forages in salt marsh and adjacent ruderal habitat, and moist grasslands in the fog belt, but has also be found in dry grasslands back from the coast.	Not likely to nest or forage at the project site due to the lack of suitable salt marsh habitat.
Alameda song sparrow *Melospiza melodia pusillula*	–/SSC	Salt marshes bordering south arm of San Francisco Bay; inhabits pickleweed marshes; nests low in gumplant (*Grindelia* sp.) bushes (high enough to escape high tides) and in pickleweed.	Species observed at project site during LSA's field survey. Suitable nesting habitat present. The CNDDB maps the project site as part of occurrence #18 for Alameda song sparrow (CDFW 2020).
Tricolored blackbird *Agelaius tricolor*	–/ST, SSC	Grasslands and agricultural fields; nests in dense vegetation near open water.	Could forage at the project site, but not suitable nesting habitat present. Species observed at the Davis Street dump, Metropolitan Golf Links, and Oyster Bay Regional Shoreline (eBird 2020).
Yellow warbler *Setophaga petechia*	–/SSC	Nests in extensive willow riparian woodlands.	May forage at the project site during migration, but not likely to nest due to lack of suitable nesting habitat.

Species	Status (Federal/State)	Habitat	Potential for Occurrence[a]
San Francisco (saltmarsh) common yellowthroat *Geothlypis trichas sinuosa*	–/SSC	Resident of the San Francisco Bay region, in fresh and salt water marshes; requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	No suitable habitat present. May forage at the project site, but not likely to nest due to lack of suitable nesting habitat. Only small patches of low quality habitat present. Closest CNDDB occurrence is a 1995 record at Arrowhead Marsh, approximately 1.9 miles from the project site. Species observed at the Metropolitan Golf Links and Oyster Bay Regional Shoreline (eBird 2020).
Mammals			
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	–/SSC	Found in wooded areas with caves or old buildings for roost sites.	Suitable roosting or hibernating habitat may be present within structures on or adjacent to the site. No tree hollows or bat roosts observed in the trees during LSA's reconnaissance-level survey. No bats or bat sign observed in concrete outfall structure at the basin.
Pallid bat *Antrozous pallidus*	–/SSC	Occupies a wide variety of habitats at low elevations. Most commonly found in open, dry habitats with rocky areas for roosting.	Suitable roosting or hibernating habitat may be present within structures on or adjacent to the site. No tree hollows or bat roosts observed in the trees during LSA's reconnaissance-level survey. No bats or bat sign observed in concrete outfall structure at the basin.
Big free-tailed bat *Nyctinomops macrotis*	–/SSC	Roosts in buildings, caves, crevices in high cliffs or rock outcrops, and occasionally in holes in trees.	Suitable roosting or hibernating habitat may be present within structures on or adjacent to the site.
Western red bat *Lasiurus blossevillii*	–/SSC	Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests; prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	No suitable habitat present.
Alameda Island mole *Scapanus latimanus partum*	–/SSC	Only known from Alameda Island; found in a variety of habitats, especially annual and perennial grasslands; prefers moist, friable soils; avoids flooded soils.	No suitable habitat present. Only known to occur on Alameda Island.
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/SE, SFP	Tidal salt marshes of San Francisco Bay and its tributaries; requires tall, dense pickleweed for cover.	Limited band of pickleweed along slough does not provide high quality habitat. No pickleweed present at location of existing outfall. Basin does not support suitable habitat. Closest CNDDB occurrence is a 1938 record at Arrowhead Marsh, approximately 1.9 miles from the project site.
Salt marsh wandering shrew *Sorex vagrans haliocoetes*	–/SSC	Middle upper salt marsh with dense vegetation cover such as pickleweed; favors areas with abundant drift wood or other surface cover.	Could occur along the tidal slough, although suitable habitat is limited. Closest CNDDB occurrence is a 1950 record from the Oakland Airport, approximately 0.1 mile from the project site and a 1938 record from Arrowhead Marsh, approximately 1.9 miles from the site.

Species	Status (Federal/State)	Habitat	Potential for Occurrence[a]
American badger *Taxidea taxus*	–/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils; needs sufficient food, friable soils and open, uncultivated ground; preys on burrowing rodents; digs burrows.	No suitable habitat present.

Status Codes:
FE = Federally listed as an endangered species
FT = Federally listed as a threatened species
FC = Federal candidate listed species
SE = State-listed as an endangered species
ST = State-listed as a threatened species
SFP = State-listed as a fully protected species
SSC = State Species of Special Concern
S2S3 = Species is somewhere between S2 Imperiled (Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state) and S3 Vulnerable (Vulnerable in the state due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors making it vulnerable to extirpation from the state).

– = No status
[a] Nearest records are based on CNDDB (CDFW 2020) occurrences unless otherwise noted.

Table B: Plant Species Observed at the Project Site, February 5, 2020

Family	Species Name	Common Name	Habitat
NATIVE			
Asteraceae	*Baccharis pilularis*	coyote brush	Uplands
	Erigeron canadensis	horseweed	Uplands
	Grindelia stricta var. *angustifolia*	marsh gumplant	Tidal Marsh
	Jaumea carnosa	fleshy jaumea	Tidal Marsh
Brassicaceae	*Cardamine oligosperma*	bitter-cress	Uplands
Chenopodiaceae	*Salicornia pacifica*	pickleweed	Tidal Marsh
Fabaceae	*Vicia* sp.	vetch	Uplands
Fagaceae	*Quercus agrifolia* var. *agrifolia*	coast live oak	Uplands
Poaceae	*Distichlis spicata*	saltgrass	Tidal Marsh
	Elymus glaucus	blue wildrye	Uplands
Rosaceae	*Heteromeles arbutifolia*	toyon	Uplands
Salicaceae	*Salix* sp.	willow	Uplands
Typhaceae	*Typha* sp.	cattail	Uplands
NON-NATIVE			
Aizoaceae	*Carpobrotus edulis*	hottentot-fig	Uplands
Apiaceae	*Conium maculatum*	poison-hemlock	Uplands
	Foeniculum vulgare	fennel	Uplands
Asteraceae	*Cirsium vulgare*	bull thistle	Uplands
	Dittrichia graveolens	stinkwort	Uplands
	Helminthotheca echioides	bristly ox-tongue	Uplands
Brassicaceae	*Hirschfeldia incana*	short-pod mustard	Uplands
	Raphanus sativus	wild radish	Uplands
Chenopodiaceae	*Amaranthus* sp.	amaranth	Uplands
Fabaceae	*Acacia* sp.	acacia	Uplands
	Genista monspessulana	French broom	Uplands
	Melilotus albus	white sweet clover	Uplands
	Trifolium sp.	clover	Uplands
Geraniaceae	*Erodium* sp.	filaree	Uplands
	Geranium dissectum	cutleaf geranium	Uplands
Malvaceae	*Malva parviflora*	cheeseweed	Uplands
Oleaceae	*Olea europaea*	olive	Uplands
Oxalidaceae	*Oxalis pes-caprae*	Bermuda buttercup	Uplands
Plantaginaceae	*Plantago coronopus*	cutleaf plantain	Uplands
Poaceae	*Avena* sp.	Wild oats	Uplands
	Bromus sp.	brome	Uplands
	Cortaderia sp.	pampas grass	Uplands
	Festuca perennis	Italian rye grass	Uplands
	Spartina sp.	cordgrass	Tidal Marsh
	Stipa miliaceae	smilo grass	Uplands
Rhamnaceae	*Rhamnus* sp.	ornamental buckthorn	Uplands
Rosaceae	*Rubus armeniacus*	Himalayan blackberry	Uplands

Table C: Wildlife Species Observed at the Project Site, February 5, 2020

Common Name	Scientific Name	Status
Reptiles		
Western fence lizard	*Sceloporus occidentalis*	R
Birds		
Mallard	*Anas platyrhynchos*	R
Canvasback	*Aythya valisineria*	W
Greater scaup	*Aythya marila*	W
Bufflehead	*Bucephala albeola*	W
Ruddy duck	*Oxyura jamaicensis*	W
Anna's hummingbird	*Calypte anna*	R
Black-necked stilt	*Himantopus mexicanus*	W
American avocet	*Recurvirostra americana*	W
Killdeer	*Charadrius vociferus*	R
Whimbrel	*Numenius phaeopus*	W
Willet	*Tringa semipalmata*	W
Greater yellowlegs	*Tringa melanoleuca*	W
Spotted sandpiper	*Actitis macularius*	R
Ring-billed gull	*Larus delawarensis*	R
Western gull	*Larus occidentalis*	R
California gull	*Larus californicus*	R
Snowy egret	*Egretta thula*	R
White-tailed kite	*Elanus leucurus*	R/CFP
Red-tailed hawk	*Buteo jamaicensis*	R
Black phoebe	*Sayornis nigricans*	R
California scrub-jay	*Aphelocoma californica*	R
American crow	*Corvus brachyrhynchos*	R
Bushtit	*Psaltriparus minimus*	R
Northern mockingbird	*Mimus polyglottos*	R
European starling	*Sturnus vulgaris*	R
House finch	*Haemorhous mexicanus*	R
White-crowned sparrow	*Zonotrichia leucophrys*	W
Golden-crowned sparrow	*Zonotrichia atricapilla*	W
Alameda song sparrow	*Melospiza melodia pusillula*	R/SSC
California towhee	*Melozone crissalis*	R
Yellow-rumped warbler	*Setophaga coronata*	W
Mammals		
Botta's pocket gopher	*Thomomys bottae*	R/burrows
California ground squirrel	*Otospermophilus beecheyi*	R
Raccoon	*Procyon lotor*	R/tracks

R = Year-round resident; expected to nest/breed on the Project site or vicinity
S = Spring/summer resident; may nest in the Project site or vicinity
W = Winter resident; winters on or near site but migrates out of Bay Area to nest
SSC = California Species of Special Concern
CFP = California Fully Protected Species

APPENDIX C: BIOLOGICAL ASSESSMENT

BIOLOGICAL ASSESSMENT

SAN LEANDRO TREATMENT WETLAND PROJECT FOR POLLUTION REDUCTION, HABITAT ENHANCEMENT, AND SHORELINE RESILIENCY

SAN LEANDRO, ALAMEDA COUNTY, CALIFORNIA

Submitted to:

City of San Leandro
Public Works – Water Pollution Control Plant
3000 Davis Street
San Leandro, California 94577

Prepared by:

LSA
157 Park Place
Pt. Richmond, California 94801
510.236.6810

Project No. TER2001

LSA

April 2020

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LIST OF ABBREVIATIONS AND ACRONYMS

BA	Biological Assessment
BMP	best management practice
BRRIT	Bay Restoration Regulatory Integration Team
CDFW	California Department of Fish and Wildlife
City	City of San Leandro Public Works Department
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
DPS	distinct population segment
EBDA	East Bay Discharge Authority
EFH	Essential Fish Habitat
FESA	Federal Endangered Species Act
FMP	Fishery Management Plan
FR	Federal Register
IPaC	Information for Planning and Consultation maintained by the U.S. Fish and Wildlife Service
MGD	million gallons per day
NMFS	National Marine Fisheries Service
PG&E	Pacific Gas and Electric Company
RWQCB	San Francisco Bay Regional Water Quality Control Board
SFBRA	San Francisco Bay Restoration Authority
USFWS	U.S. Fish and Wildlife Service
WPCP	Water Pollution Control Plant

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1.0 INTRODUCTION

1.1 PURPOSE OF THE BIOLOGICAL ASSESSMENT

The purpose of this Biological Assessment (BA) is to review and analyze the proposed project in sufficient detail to determine the extent to which it may affect threatened, endangered, or candidate species and designated or proposed critical habitat protected under the Federal Endangered Species Act (FESA) of 1973.

LSA has prepared this BA on behalf of the City of San Leandro Public Works Department (City) for use by the U.S. Army Corps of Engineers (Corps) to facilitate consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) in accordance with legal requirements set forth under regulations implementing Section 7 of the FESA. In addition to compliance with provisions of the FESA, Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires federal agencies to consult with NMFS regarding any action or proposed action that may adversely affect Essential Fish Habitat (EFH) for federally managed fish species. All native San Francisco Estuary fish species are federally managed under the Magnuson-Stevens Act, and Suisun Bay waters within the project area are considered EFH for fish species covered under the Pacific Groundfish Fishery Management Plan (FMP) and Pacific Salmon FMP. As such, this BA will also address potential effects of the proposed project on EFH.

1.1.1 Definitions

Definitions of key terms used in this document are provided below.

Action Area refers to the area directly or indirectly affected by the proposed project, including adjacent open waters of the San Francisco Bay. A full description of the Action Area is provided in Section 2.3.

Project Area refers to the entire area where proposed project activities will occur, including the staging areas, access roads, treatment pond, and the in-water work at the outfall into the tidal slough.

Project Vicinity encompasses all lands within 5 miles of the project area boundary.

Proposed Project refers to the San Leandro Treatment Wetland Project for Pollution Reduction, Habitat Enhancement, and Shoreline Resiliency Project, synonymous with "project."

1.2 PROJECT INFORMATION AND RESPONSIBLE PARTIES

Title: San Leandro Treatment Wetland Project for Pollution Reduction, Habitat Enhancement, and Shoreline Resiliency

Lead Federal Agency: U.S. Army Corps of Engineers, San Francisco District

Location: 3000 Davis Street, San Leandro, Alameda County, California 94577
San Leandro 7.5-minute U.S. Geological Survey Quadrangle

Applicant: City of San Leandro
Public Works – Water Pollution Control Plant
3000 Davis Street
San Leandro, California 94577
Contact: Hayes Morehouse, Administrative Analyst II
Tel: 510-577-3437

BA Preparer: LSA
157 Park Place
Point Richmond, California 94801
Contacts: Dan Sidle, Associate/Senior Biologist; Ross Dobberteen, Principal
Tel: 510/236-6810

1.3 PRE-FIELD INVESTIGATION AND SPECIES CONSIDERED

LSA assessed the biological resources in the Action Area (Figures 1 and 2), which included a review of relevant literature and databases, including the California Natural Diversity Database (CNDDB; CDFW 2020; Figure 3), USFWS Information for Planning and Consultation (IPaC) database search (USFWS 2020), and a NMFS species list (NMFS 2020a). These database search results were reviewed in order to compile a list of endangered and threatened species under USFWS and NMFS jurisdiction that may occur in the Action Area and/or may be affected by the proposed project. Table A lists the federally listed species that were evaluated for the project.

FIGURE 1

N

0 2000 4000
FEET

SOURCE: Esri World Street Map (03/2020).

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Project Area Location

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FIGURE 2

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Action Area

SOURCE: Towill (01/2020); USGS LiDAR (11/2010); Alameda County LiDAR (07/2006);Google Maps Sat Aerial (04/2019).

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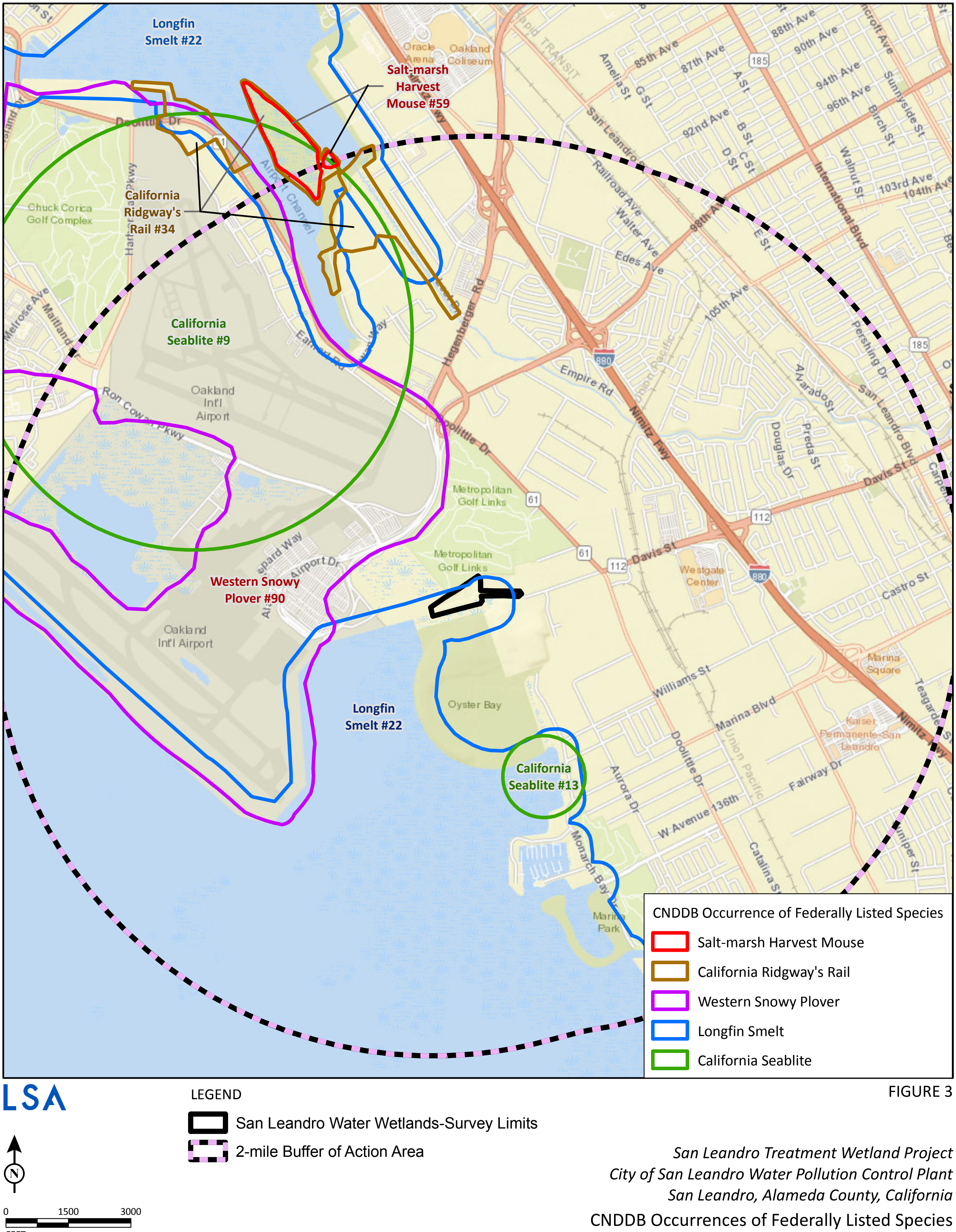

LSA

FIGURE 3

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

CNDDB Occurrences of Federally Listed Species within 2 Miles of the Action Area

SOURCE: CDFW CNDDB (02/2020); ESRI World Street Map.

I:\TER2001\GIS\Maps\BA\Figure 3_CNDDB Occurrences of Federally Listed Species within 2 Miles.mxd (3/5/2020)

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Table A: Federally Listed Species Evaluated for the Project

Common Name	Scientific Name	Federal Status	Preliminary Effect Determination and Discussion
PLANTS			
Robust spineflower	*Chorizanthe robusta* var. *robusta*	FE	No effect. Suitable sandy to gravelly substrate not present. Last recorded occurrence 1 mile northeast of site in 1894.
Contra Costa goldfields	*Lasthenia conjugens*	FE	No effect. Suitable habitat not present.
California seablite	*Suaeda californica*	FE	No effect. Suitable habitat not present. Last CNDDB occurrence was recorded in 2009, approximately 3 miles south of the Action Area, near Robert's Landing in San Leandro.
INVERTEBRATES			
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE	No effect. Does not occur in the Action Area and no suitable habitat is present.
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT	No effect. Does not occur in the Action Area and no suitable habitat is present; host plant *Plantago erecta* is not present.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	No effect. Does not occur in the Action Area and no suitable habitat including seasonal wetlands is present.
FISH			
North American green sturgeon (southern DPS)	*Acipenser medirostris*	FT, CH	May affect, not likely to adversely affect. Potential foraging habitat is present in the tidal slough, but spawning habitat is absent. Avoidance and mitigation measures for this species are provided in Section 2.2.
Steelhead (Central California coast DPS)	*Oncorhynchus mykiss*	FT, CH	May affect, not likely to adversely affect. Although suitable spawning habitat is absent in the slough, occasional stray individuals could occur. Avoidance and mitigation measures for this species are provided in Section 2.2.
Delta smelt	*Hypomesus transpacificus*	FT	No effect. Project site is outside of known range for species.
Longfin smelt	*Spirinchus thaleichthys*	FC	May affect, not likely to adversely affect. The tidal slough and surrounding harbor are not known as breeding grounds for this species. Species detected in the Oakland Harbor in 2005 (CDFW 2020) and could occur in the tidal slough. The CNDDB maps the on-site tidal slough as part of occurrence #22 for longfin smelt (CDFW 2020). Avoidance and mitigation measures for this species are provided in Section 2.2.
Tidewater goby	*Eucyclogobius newberryi*	FE	No effect. Species is considered extinct from the San Francisco Bay (Moyle 2002).

Common Name	Scientific Name	Federal Status	Preliminary Effect Determination and Discussion
AMPHIBIANS			
California tiger salamander (Central California DPS)	*Ambystoma californiense*	FT	No effect. No suitable seasonal freshwater aquatic habitat or grassland upland habitat is present in the Action Area.
California red-legged frog	*Rana draytonii*	FT	No effect. Does not occur in the Action Area and no suitable freshwater aquatic habitat is present.
REPTILES			
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT	No effect. Does not occur in the Action Area and no suitable habitat is present.
BIRDS			
Western snowy plover	*Charadrius alexandrinus nivosus*	FT	May affect, not likely to adversely affect. Could forage within the Action Area, but not likely to nest in the Action Area due to the lack of suitable nesting habitat. Avoidance and mitigation measures for this species are provided in Section 2.2.
Yellow-billed cuckoo	*Coccyzus americanus*	FT	No effect. Does not occur in the Action Area and no suitable dense, wooded habitat is present.
California Ridgway's rail	*Rallus longirostris obsoletus*	FE	No effect. Does not occur in the Action Area and no suitable tidal/brackish marsh breeding habitat is present in and within 500 feet of the Action Area.
California least tern	*Sternula antillarum browni*	FE	No effect. Does not occur in the Action Area and no suitable nesting habitat, such as sandy beaches, alkali flats, or other hard-pan surfaces, is present.
MAMMALS			
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE	No effect. Does not occur in the Action Area and no suitable tidal/brackish marsh habitat is present.

Acronyms
CH = Critical Habitat (designated)
DPS = Distinct Population Segment
FC = Federal Candidate
FE = Federally Endangered
FT = Federally Threatened

Based on a review of the distribution and habitat requirements of these species and habitat conditions within the Action Area, LSA determined that 15 of these species would not be affected by the proposed project because no suitable habitat is present in the Action Area and these species would not occur. These 15 species are included in Table A but are not further discussed in this BA. The remaining four species have either been recorded in the project vicinity or could occur based on the presence of suitable habitat: North American green sturgeon southern distinct population segment (DPS) (*Acipenser medirostris*), Central California coast steelhead DPS (*Oncorhynchus mykiss*), longfin smelt (*Spirinchus thaleichthys*), and western snowy plover (*Charadrius alexandrines nivosus*). Section 3.2 provides species accounts, Section 4.0 analyzes the potential for the proposed project to affect these species, and Section 2.2 provides avoidance and mitigation measures for these species.

1.4 FIELD INVESTIGATION

LSA senior biologists Dan Sidle and Bernhard Warzecha conducted a field survey on February 5, 2020. The purpose of the survey was to perform a wetland delineation, assess current habitat conditions, and evaluate the potential occurrence of federally listed plant and animal species in the Action Area.

1.5 NOMENCLATURE

The scientific nomenclature and vernacular nomenclature used in this analysis for the plant and wildlife species are from the following standard sources: plants, Baldwin et al. (2012) and updates listed on the Jepson Herbarium website (ucjeps.berkeley.edu/eflora); amphibians and reptiles, Crother (2017) and/or AmphibiaWeb (www.amphibiaweb.org); birds, American Ornithologists' Union (1998) and supplements through 2020; and mammals, Bradley et al. (2014). For animals, subspecies names are used only when a specific subspecies is listed by the USFWS or NMFS.

1.6 CONSULTATIONS TO DATE

A pre-application meeting for the project with the Bay Restoration Regulatory Integration Team (BRRIT) occurred on January 8, 2020. Representatives from the USFWS and NMFS were present during this BRRIT meeting. No other formal consultation with the USFWS or NMFS has occurred to date for this project. The submittal of this BA is intended to initiate further FESA consultation with the USFWS and NMFS.

1.7 PROJECT LOCATION

The Action Area includes a 4.3-acre storage basin and adjacent upland areas owned by the City and managed by the San Leandro Water Pollution Control Plant (WPCP). The triangular-shaped basin is located at the western end of the WPCP and the tidal slough is located along the southern boundary (Figures 1 and 2).

1.7.1 Action Area Description

The basin is bordered on the south and east by a drainage channel with direct connection to the San Francisco Bay, and on the north by the Oakland International Airport and the Metropolitan Golf Links course. The Bay Trail runs along the northwestern edge of the basin. Other surrounding land uses include a gun club (property owned by the City), a waste transfer facility, and the Oyster Bay Regional Shoreline Area, which is a 194-acre regional park operated by the East Bay Regional Park District.

The storage basin itself maintains the physical appearance of active salt ponds in the region, which are void of vegetation in all areas except the perimeter of the basin, with plant assemblages consistent with other heavily disturbed sites along the San Francisco Bay. Historic photos from the early 1990s indicate that the lands to the west of the storage basin were graded or otherwise disturbed, but have since regained tidal marsh features.

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2.0 DESCRIPTION OF THE PROPOSED PROJECT

2.1 PROJECT DESCRIPTION

2.1.1 Purpose and Need

The City owns and operates a wastewater treatment facility located at 3000 Davis Street in San Leandro called the WPCP. The WPCP was originally constructed in 1938, and several expansions and modifications have occurred since then. The WPCP is designed to treat 7.6 million gallons per day (MGD) (average dry weather flow) from residential and commercial properties and discharges the effluent into the San Francisco Bay via the East Bay Discharge Authority (EBDA) discharge facility. Average dry weather flow is about 5 MGD.

At the western edge of the WPCP is a 4.3-acre basin, historically utilized for wet weather storage. In 2018, the City decided to pursue the conversion of the basin to a multi-benefit wastewater treatment and shoreline resiliency project. In coordination with the San Francisco Bay Regional Water Quality Control Board (RWQCB), wastewater agencies, and other regulatory stakeholders represented on the San Francisco Bay Nutrient Management Strategy, Measure AA funding was pursued to facilitate planning, design, and environmental review. In its first funding round, the San Francisco Bay Restoration Authority (SFBRA) awarded the City a Measure AA grant to plan and design a water quality improvement, shoreline restoration, and resiliency project.

The project includes conversion of the wastewater storage basin into a multi-benefit treatment wetland to improve operational capacity of the WPCP, anticipate future nutrient regulations, enhance habitat quality, and adapt to rising seas.

2.1.2 Project Details

The project envisions diverting a portion of the plant effluent through an engineered nitrification system prior to discharge to seepage slopes comprised of terraced bioreactors designed to maximize denitrification prior to release to a shallow wetland treatment pond. A shallow (approximately 12-inch) free surface water component of the wetland will be lined with an impermeable geotextile or other material and bermed to maximize retention time and minimize the presence of preferential flow pathways, to favor denitrification and photolysis of organic contaminants, such as pharmaceuticals and pesticides.

Polished wastewater will discharge directly to the San Francisco Bay at the existing outfall located at the western edge of the existing basin, pending development of compliance objectives and attainment of regulatory approvals.

2.1.3 Project Benefits

The proposed project is expected to improve habitat conditions and restrict movement of water from the treatment wetland to underlying soils via an impermeable membrane. Measures will be developed to minimize the project footprint and various potential effects from the construction and operational phases. Anticipated impacts associated with discharge of polished effluent to the San Francisco Bay via a shallow water discharge shall be mitigated in consultation with the RWQCB.

2.2 CONSERVATION MEASURES

2.2.1 General Avoidance and Minimization Measures

Given the potential or known occurrences of four federally listed species within or adjacent to the Action Area, the City will implement best management practices (BMPs) and avoidance and minimization measures, presented below, to minimize the effects of the proposed project on federally listed species and their habitat.

2.2.1.1 Limits of Work

In-water project-related activities will be confined to the designated work area within the vicinity of the outfall; project personnel will be restricted from entering adjacent in-water areas.

2.2.1.2 Spills and Accidental Discharge

The City and its contractors will be responsible for structuring operations in a manner that minimizes the risk of spills or accidental discharge of fuels or hazardous materials. The City and its contractors will, at a minimum, ensure that:

1. All employees handling fuels and other hazardous materials are properly trained;
2. All equipment is in good operating order and inspected on a regular basis; and
3. Hazardous materials, including chemicals, fuels, and lubricating oils, will not be stored within 200 feet of the tidal slough and other wetland features. This requirement applies to storage of these materials and does not apply to normal operation or use of equipment in these areas.

2.2.1.3 Emergency Spill and Containment Plan

In the event of an accidental spill of product from equipment or vehicles, a spill plan will be implemented. The spill plan will be included in the bid specification package and will be present at the work site during all project-related activities.

At a minimum, the City and its contractors will:

1. Ensure that each construction crew (including cleanup crews) has sufficient supplies of absorbent and barrier materials on site to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills.
2. Ensure that each construction crew has sufficient tools and material on site to stop leaks.
3. Know the contact names and telephone numbers for the City contacts and local, State, and federal agencies (including, if necessary, the U.S. Coast Guard and the National Response Center) that might need to be notified in the event of a spill.
4. Follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

2.2.1.4 General Work Site Management Practices

The following measures will be employed by the City and its contractors to avoid and minimize impacts to water quality in the project area:

1. Secondary containment will be provided for any equipment or vehicles stored in the work area to reduce the potential for any spills.

2. All fuel required by construction equipment will have primary and secondary containment. Any spills will be contained and properly disposed of according to permit requirements.

3. All vehicles and equipment will be properly maintained to reduce the potential for spills of petroleum-based products. Containment booms and sorbent materials will be available during work activities and will be deployed immediately in the event of a spill to limit its spread.

4. No debris, soil, silt, sand, cement, concrete, or washings thereof, or other construction-related materials or wastes, oil or petroleum products, or other organic or earthen material will be allowed to enter into or be placed where it may be washed by rainfall or runoff into the tidal slough.

5. If any materials or wastes are accidentally released into the slough, project supervisors will immediately halt all work and utilize all available resources to ensure containment and removal.

6. Necessary steps will be implemented to ensure the health and safety of the workers on the job and public in the surrounding area. The crew and supervisors will be trained with all documentation current and environmental and security regulations precisely followed.

7. BMPs will be consistently employed to help prevent pollutants from entering the slough. Employees, subcontractors, and vendors must be informed, educated, and trained to understand the applicable practices and procedures for the various construction activities being performed.

8. After construction is completed, final cleanup of the project area will include removal of all refuse generated by construction that will be placed into trucks for proper disposal. In addition, all equipment will be safely demobilized from the area.

9. The City will schedule as much work as possible during the dry season to minimize the potential for wet weather, surface flooding, and high water tables in the work area.

10. Pets will not be allowed in or near the work site.

11. Firearms will not be allowed in or near the work site. No intentional killing or injury of wildlife will be permitted.

12. The work site will be maintained in a clean condition. All trash (e.g., food scraps, cans, bottles, containers, wrappers, cigarette butts, and other discarded items) will be placed in closed containers and properly disposed of off-site.

2.2.2 Federally Listed Fish and Essential Fish Habitat Protection Measures

The avoidance and minimization measures described below have been incorporated into the project and will serve as mitigation measures to offset potential effects to the federally listed fish species potentially present in the Action Area and to EFH. Most of these measures are adapted from the NMFS *Non-fishing Impacts to Essential Fish Habitat and Recommended Conservation Measures* (Hanson et al. 2003). The following measures will be implemented for the proposed project.

2.2.2.1 General Endangered and Threatened Species Measures

Daylight Working. All work will be conducted during daylight hours, and no artificial illumination will be used.

Work Areas. Personnel will limit their entry into the immediate vicinity of the project area. All personnel and their equipment will be required to stay within the designated work areas to perform job-related tasks and will be directed to stay out of surrounding areas.

In-water work will be performed at low tide when the outfall is exposed on the mud flat and will occur outside the primary salmonid migration window (June 15 to November 30). If replacement and/or major retrofits of the outfall are required, a cofferdam will be installed between the bank where the outfall work will occur and the edge of the tidal slough. The cofferdam will be installed at low tide when fish are not present and will be made of sand bags, clean gravel bags, sheet piles, or other suitable material. The cofferdam will be installed to isolate the immediate work area from the rest of the tidal slough, as well as to prevent sediment from flowing into the slough and from fish entering the work area.

The following conservation measures will be implemented to reduce potential impacts to fish and EFH:

- When possible, in-water work shall be conducted at low tide when fish are not present.
- If in-water work cannot be avoided, working outside of the primary salmonid migration window (June 15 to November 30) will limit the presence of listed salmonids in the Action Area. Green sturgeon can be present in the area year-round.
- The cofferdam shall be completely removed after completion of the in-water work.
- The suspension of sediments and disturbance of the substrate shall be minimized. Measures to help accomplish this include, but are not limited to, the following:
    - When practicable, the cofferdam shall be removed with a vibratory hammer, rather than the direct pull or clamshell method.
    - The cofferdam shall be slowly removed to allow sediment to slough off at, or near, the mudline.

  - The operator shall first hit or vibrate the temporary cofferdam to break the bond between the sediment and dam to minimize the potential for the dam to fall apart, as well as reduce the amount of sediment sloughing off the dam during removal.
  - Erosion control and stabilization measures shall be incorporated to reduce erosion potential.
  - Spoils and construction-related trash shall be properly disposed of offsite.

- If a cofferdam is necessary for the in-water work, an approved biological monitor shall be present during installation of the cofferdam to monitor fish that may become trapped, injured, or killed during the installation. If fish are observed to be injured or killed, outfall work will cease and the City will notify NMFS, USFWS, and/or CDFW, to determine appropriate steps to avoid additional effects to the fish.

- If a cofferdam is necessary for the in-water work and if fish need to be salvaged within the cofferdam, the approved biological monitor shall wet hands and nets prior to touching fish to ensure the slime coating on the fish is protected. Captured fish shall be placed in buckets filled with clean cool water and released in the tidal slough outside of the cofferdam. A minimum of two buckets will be available so juveniles (young-of-the-year) can be segregated from larger age-classes to avoid predation.

- If a cofferdam is necessary for the in-water work, the cofferdam shall be repaired or replaced as needed to remain effective. Soil/silt build up behind the dam shall be promptly removed and any undermined areas or breaches shall be repaired immediately.

- The approved biological monitor shall conduct a worker awareness program prior to the start of construction for all personnel when they first arrive on site. This training shall occur prior to initial construction clearing operations and exclusionary fencing installation. This training shall include information on the status of the sensitive species and habitats in the vicinity of the work area, how and where sensitive species and habitats may be encountered within the work area, and procedures to follow when the species and habitats are encountered. Measures being implemented to minimize and avoid impacts to sensitive species and habitats shall also be discussed. At the end of the training, construction personnel shall sign a training log stating that they attended the worker awareness program and that they understand the protection measures being implemented.

- An employee education program for all construction personnel will be developed and implemented by the biological monitor prior to the initiation of construction activities. At a minimum, the program will include the following topics: (1) biology, conservation, and legal status of the marine mammals, fisheries, and nesting birds; (2) responsibilities of the biological monitor; (3) delineation and flagging of adjacent habitat; (4) limitations on all movement of those employed on site, including ingress and egress of equipment and personnel, to designated construction zones (personnel shall not be allowed access to adjacent sensitive habitats); (5) on-site pet prohibitions; (6) use of trash containers for disposal and removal of trash; and (7) project features designed to reduce the impacts to habitat.

2.2.3 Federally Listed Birds and Protection Measures

The avoidance and minimization measures described below have been incorporated into the project and will serve as mitigation measures to offset potential effects to the federally listed western snowy plover. Implementation of the following measures would reduce potential adverse effects to western snowy plovers:

- The project shall avoid construction activities during the bird nesting season (February 1 through August 31). If construction activities are scheduled during the nesting season, a qualified biologist shall conduct a pre-construction survey for nesting western snowy plovers within suitable nesting habitat on and within 250 feet of the project site (where accessible). The pre-construction survey shall be conducted no more than 14 days prior to the start of work. If the survey indicates the presence of nesting snowy plovers, the USFWS shall be contacted in order to determine the appropriate protective buffer zones to be established around the nests.

2.3 ACTION AREA

The Action Area is defined in 50 Code of Federal Regulations § 402.02 as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the purposes of this BA, the Action Area was defined by analyzing the potential extent of effects of the proposed project including temporary impacts to habitat in the tidal slough and species sensitivity to human-caused disturbance. The Action Area includes the entire project area and extends approximately 25 to 75 feet into the tidal slough (Figure 2).

3.0 STATUS OF FEDERALLY LISTED SPECIES AND CRITICAL HABITAT

3.1 ENVIRONMENTAL BASELINE

3.1.1 Land Use and Topography

The Action Area includes a constructed storage basin, access roads, ruderal vegetation, native and non-native trees and shrubs, and rock-rip along the shoreline of a tidal slough (Figure 2).

3.1.2 Land Cover Types

The Action Area includes a 4.3-acre storage basin and adjacent upland areas owned by the City and managed by the San Leandro WPCP and the tidal slough that flows from Oyster Bay and the San Francisco Bay (Figures 1 and 2). The triangular-shaped basin is located at the western end of the WPCP and the drainage channel to the east represents the former San Francisco Bay shoreline (Figure 2). The basin is bordered on the south and east by a tidal slough with direct connection to the San Francisco Bay, and on the north by the Oakland International Airport and the Metropolitan Golf Links course. The San Francisco Bay Trail runs along the northwestern edge of the basin. Other surrounding land uses include a gun club (property owned by the City), a waste transfer facility, and the Oyster Bay Regional Shoreline Area. The storage basin is void of vegetation in all areas except the perimeter of the basin, with vegetation consisting of salt marsh plants along the lower perimeter of the basin and upland plants along the banks of the basin. Soils on the project site are mapped as *Xeropsamments, fill* and *Xerorthents, clayey* (UC Davis SoilWeb 2020).

3.1.3 Vegetation

Vegetation within the project site includes salt marsh vegetation along the tidal slough and basin and trees, shrubs, and ruderal (weedy) plants along the banks of the basin, levee, and access road that surrounds the basin. Trees growing on the site consist of primarily ornamental species, such as acacia (*Acacia* sp.) and olive (*Olea europaea*), but at least one small native coast live oak (*Quercus agrifolia*) and native willow (*Salix* sp.) were observed along the bank of the basin. Shrubs observed include coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), Himalayan blackberry (*Rubus armeniacus*), and various ornamental shrubs. The non-native ruderal and annual grassland vegetation includes several grasses and forbs, such as pampas grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), wild oats (*Avena* sp.), brome (*Bromus* sp.), Italian rye grass (*Festuca perennis*), bristly ox-tongue (*Helminthotheca echioides*), cheeseweed (*Malva parviflora*), and short-pod mustard (*Hirschfeldia incana*). A small patch of native blue wild rye (*Elymus glaucus*) was also observed along the upper bank of the slough. Appendix A provides a list of the plant species observed during LSA's survey.

Vegetation is sparse within the tidal slough and lower banks of the levee. Plants observed along the tidal slough consists of: pickleweed (*Salicornia pacifica*), fleshy jaumea (*Jaumea carnosa*), and cordgrass (*Spartina* sp.) along the lower tidal zone; saltgrass (*Distichlis spicata*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*) along the middle tidal zone; and upland vegetation, such as pampas grass, fennel, and coyote brush, along the top of the slough's levee.

3.1.4 Fish and Wildlife

Fish and wildlife species observed in the Action Area during the field visit included various species of birds that have adapted to human-modified landscapes throughout the San Francisco Bay Area and include California towhee (*Melozone crissalis*), black phoebe (*Sayornis nigricans*), white-crowned sparrow (*Zonotrichia leucophrys*), and northern mockingbird (*Mimus polyglottos*). The aquatic habitat adjacent to the project site provides habitat for various fish species in addition to the three federally listed species addressed in the BA; examples include the starry flounder (*Platichthys stellatus*), leopard shark (*Triakis semifasciata*), jack smelt (*Atherinopsis californiensis*), and the non-native striped bass (*Morone saxatilis*). The adjacent aquatic habitat also provides foraging and loafing habitat for various species of ducks, gulls, terns, and other waterbirds. Diving ducks, such as greater scaup (*Aythya marila*) and ruddy duck (*Oxyura jamaicensis*), forage in the waters adjacent to the WPCP. Dabbling ducks, such as mallard (*Anas platyrhynchos*) and canvasback (*Aythya valisineria*), also forage in the shallows adjacent to the Action Area.

3.1.5 Wildlife and Plants Not Present in Action Area

LSA biologists determined that no tidal/brackish marsh vegetation is present at or adjacent to the location of the outfall with limited tidal/brackish marsh vegetation present in the Action Area by analyzing sources from Section 1.3 (e.g., CNDDB, IPaC, NMFS) and from the field survey. This adjacent tidal vegetation within the Action Area consists of a small band of mostly pickleweed, located approximately 700 feet northeast of the outfall. The breeding habitat for the California Ridgway's rail (*Rallus longirostris obsoletus*) occurs mostly within lower tidal marsh zones near tidal sloughs and where cordgrass is abundant (Harvey 1980, Zembal and Massey 1983), while habitat for the salt marsh harvest mouse (*Reithrodontomys raviventris*) occurs within mid- to upper elevations of tidal and diked salt marshes dominated by pickleweed (USFWS 1984). The outfall construction area does not contain pickleweed and cordgrass and the small patches of pickleweed and cordgrass within the Action Area are located approximately 700 feet from the outfall. USFWS has also stated that habitat for the California Ridgway's rail and salt marsh harvest mouse does not appear to exist at the project site (Bloom, pers. comm.). Therefore, coastal marsh species, including California Ridgway's rail and salt marsh harvest mouse, are likely not present in the Action Area and will not be affected by the proposed project. Finally, the proposed project will not take place within or adjacent to eelgrass beds or shellfish beds (Merkel & Associates, Inc. 2009; California State Coastal Conservancy et al. 2010).

3.2 SPECIES ACCOUNTS

3.2.1 North American Green Sturgeon – Southern Distinct Population Segment

3.2.1.1 Status and Biology

The North American green sturgeon southern DPS was federally listed as threatened on April 7, 2006 (71 Federal Register [FR] 17757); this listing took effect on June 6, 2006. The southern DPS includes all populations originating from coastal watersheds south of the Eel River, with the only known spawning population in the Sacramento River. Critical habitat for the southern DPS of green sturgeon was designated by NMFS on October 9, 2009 (74 FR 52300); this designation took effect on November 9, 2009. This designation includes all waters of the San Francisco Bay.

Green sturgeon primarily occurs in nearshore oceanic waters, bays, and estuaries. Adults and juveniles are benthic feeders, with juveniles in the San Francisco Estuary known to feed on opossum shrimp (*Neomysis mercedis*) and amphipods (*Corophium* sp.) (Radtke 1966, as cited in Moyle 2002). Spawning occurs in deep, fast water within the main stem of the Sacramento River and some of its larger tributaries. Juveniles spend 1 to 4 years in freshwater and estuarine waters before dispersing to saltwater (Beamesderfer and Webb 2002).

3.2.1.2 Potential for Occurrence

This species is only expected to occur in the Bay waters adjacent to the project site on an incidental basis. Stray individuals may occasionally venture near the Action Area from their primary migration route from the Golden Gate north to the Sacramento San Joaquin Delta, but such movements are expected to be rare and short term in duration.

3.2.2 Central California Coast Steelhead DPS

3.2.2.1 Status and Biology

The Central California coast steelhead DPS was federally listed as threatened on August 18, 1997 (62 FR 43937); the threatened status was reaffirmed on February 6, 2006 (71 FR 834). This DPS includes all naturally spawned anadromous populations below impassable barriers in California streams from the Russian River to Aptos Creek, and the drainages of the San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. Critical habitat for this steelhead DPS was designated on September 2, 2005, with an effective date of January 2, 2006.

Steelhead within the San Francisco Bay may be classified as ocean-maturing or winter steelhead that typically begin their spawning migration during the fall and winter and spawn within a few weeks to a few months from when they enter freshwater (McEwan and Jackson 1996, as cited in Leidy 2007). Steelhead migrate upstream from the ocean after one to four growing seasons at sea (Burgner et al. 1992, as cited in Leidy 2007). Upstream migrating steelhead may be observed within the San Francisco Bay between August and March (Leidy 2007). Ocean-maturing steelhead typically spawn between December and April, with most spawning occurring between January and March (Moyle 2002). Steelhead may not die after spawning like Pacific salmon and thus return to the ocean following spawning to spawn again the following year and potentially a third or fourth time. Juvenile steelhead rear in freshwater for 1 to 4 years before migrating downstream.

3.2.2.2 Potential for Occurrence

The tidal slough in the Action Area provides potential habitat for adult Central California coast steelhead DPS. Stray individuals may occasionally venture near the project site from their primary migration route, but such movements are expected to be rare and short term in duration.

3.2.3 Longfin Smelt

3.2.3.1 Status and Biology

Longfin smelt is a candidate federally listed species, which is a species considered warranted for listing but was precluded by USFWS due to other higher priority listing activities. This species is addressed in this BA in case it becomes listed during project implementation. Adult and juvenile longfin smelt occur in the open waters of estuaries, mostly in the middle or at the bottom of the water column. In the San Francisco Bay, the center of their distribution gradually moves down the estuary during summer. They concentrate in most years in the San Pablo Bay from April to June and become more dispersed in late summer. From June through October, juveniles and adults are uncommon to rare in the Delta (CDFG 2009). There is a gradual shift in population upstream in late fall and winter, as yearlings begin to move upstream to spawn. Longfin smelt range in freshwater is broadest during the November through April migration and spawning period (CDFG 2009). Spawning takes place in freshwater, over sandy or gravel substrates, rocks, and aquatic plants. In the San Francisco Bay, spawning occurs mainly downstream of Medford Island in the San Joaquin River.

3.2.3.2 Potential for Occurrence

The tidal slough and surrounding harbor are not known as breeding grounds for this species. Stray individuals may occasionally venture near the project site from their primary migration route, but such movements are expected to be rare and short term in duration. No historical occurrences of longfin smelt have been recorded as part of the San Francisco Bay Study at the CDFW survey stations near the project site (CDFW 2018).

3.2.4 Western Snowy Plover

3.2.4.1 Status and Biology

The Pacific Coastal distinct population segment of the western snowy plover is listed as threatened under the federal Endangered Species Act. Western snowy plovers were historically widely distributed along the California coast but have undergone significant declines in recent decades (USFWS 2007).

Western snowy plovers are typically found in open, sparsely vegetated habitats, most commonly on beaches. During the winter they may be found on beaches they do not nest on, as well as manmade salt ponds, and estuarine sand and mud flats (USFWS 2007). In the winter, western snowy plovers are gregarious, sometimes congregating in large flocks on beaches and other open areas. During the breeding season, western snowy plovers nest primarily on coastal beaches above the high-tide line, including sand spits, dune-backed beaches, and other coastal features where vegetation is sparse (USFWS 2007). Nests are placed in shallow depressions created by males. Nesting areas typically have some vegetation or washed up debris, such as kelp or drift wood, which provide shelter from winds and predators and/or provide foraging habitat.

3.2.4.2 Potential for Occurrence

Western snowy plovers could briefly fly through or forage at the project site. This species could forage in the tidal slough and basin, although this species is unlikely to nest in the Action Area due to the limited habitat present. They could possibly nest in the basin if water is not present during the nesting season (March 1 through September 30), but they are not likely to nest in the basin due to limited suitable habitat and the long period in which the basin is inundated with water. The closest breeding occurrence is a 1979 record approximately 0.3 mile from the site at Bay Farm Island (CDFW 2020). This species was observed at the Oyster Bay Regional Shoreline in January 1984 (eBird 2020) and has been recorded at the Oakland International Airport (Bloom, pers. comm.).

3.3 ESSENTIAL FISH HABITAT

EFH are those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of EFH: "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle. The importance of EFH is not necessarily the presence of federally listed species, but what the habitat contributes to the surrounding environment (i.e., wetlands, near shore ecosystem).

All native San Francisco Bay fish species are federally protected under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Amendments to this Act in 1996 require all federal agencies to consult with NMFS regarding any action or proposed action that may adversely affect EFH for federally managed fish species.

San Francisco Bay waters adjacent to the Action Area are designated as EFH by NMFS for fish species covered under the Pacific Groundfish FMP, Coastal Pelagic Species FMP, and Pacific Salmon FMP. If it is determined that the project will impact EFH, federal agencies responsible for permitting other aspects of the project (e.g., wetlands) would be required to consult with NMFS as part of their permitting process and an EFH assessment would need to be prepared. No focused fish surveys were conducted as a part of this study.

The proposed project may temporarily impact Pacific Coast Salmonids, Pacific Coast Groundfish, and Coastal Pelagic EFH through work related to the replacement or modification of the existing outfall pipe that extends into the tidal slough.

As such, this BA will also address potential effects of the Proposed Action on EFH as a result of the proposed outfall work.

3.4 SHELLFISH BEDS

The Action Area does not contain any shellfish beds. The tidal slough within the Action Area is not located in shellfish habitat mapped in the San Francisco Bay within the 2010 San Francisco Bay Subtidal Goals Report (California State Coastal Conservancy et al. 2010). No shellfish beds were observed at or near the outfall during the field survey.

3.5 EELGRASS BEDS

The Action Area does not contain eelgrass beds. The Action Area is not located within or adjacent to eelgrass beds mapped in the San Francisco Bay Eelgrass Inventory (Merkel & Associates, Inc. 2009).

4.0 EFFECTS OF THE PROPOSED PROJECT ON FEDERALLY LISTED FISH

This section identifies potential temporary adverse effects of the proposed project on the two federally listed fish species and EFH during work related to the replacement or modification of the outfall. The existing outfall along the bank of the tidal slough may be replaced, repaired, or modified. If possible, work will occur during low tide when water and fish are not present at the outfall. If work needs to be completed during a higher tide, a temporary cofferdam or similar structure will be installed to prevent sediment from entering the slough and prevent fish from accessing the work area. No permanent effects from the proposed project are anticipated with the implementation of avoidance and minimization measures described in Section 2.2.

4.1 TEMPORARY EFFECTS FROM REPLACEMENT OR MODIFICATIONS OF OUTFALL

4.1.1 Turbidity and Increased Sedimentation

The proposed project alternative is to conduct all in-water work during low tides, but if in-water work cannot take place solely during high tides, a cofferdam will be used. The proposed project is expected to create temporary increases in turbidity in the adjacent water column within the slough from increased sedimentation around the outfall. Short-term, localized turbidity effects on anadromous salmonids may potentially interfere with visual foraging, increase susceptibility to predation, and interfere with migratory behavior. Green sturgeon may be affected but are likely less susceptible to turbidity effects than the other federally listed fish species in this BA because they forage on bottom sediments (NMFS 2020b). Minor and localized elevated levels of turbidity from outfall work will be temporary and are not expected to result in harm, injury, or behavioral responses that impair migration or make federally listed fish species more susceptible to predation.

If a cofferdam is not needed, a temporary silt fence will be installed during any maintenance activities that are likely to result in the disturbance of sediment within the existing outfall. This temporary fence will be installed and removed during the low tide.

4.1.2 Contaminants

The current level of environmental contaminants in the slough within the Action Area is unknown, but the suspension of sediments associated with removal, modification, and/or replacement of the outfall may temporarily increase contaminant levels in the water column. However, such minor and localized elevations in contaminants should be quickly diluted to levels that are unlikely to adversely affect federally listed fish.

4.1.3 Toxic Chemicals

Equipment refueling, fluid leakage, equipment maintenance, and construction activities in the slough pose some risk of contamination of aquatic habitat and subsequent injury or death to federally listed fish species. However, due to general construction environmental protection measures identified in Section 2.2.1, risk of aquatic habitat contamination is expected to be minimal and adverse effects on federally listed fish species are not expected.

4.1.4 Conclusions

The proposed project **may affect but is not likely to adversely affect** green sturgeon southern DPS and Central California coast steelhead DPS. Although these fish species may occur in the tidal slough adjacent to the project area during construction activities at the outfall, the avoidance and minimization measures in Section 2.2 will be implemented to reduce these effects.

4.2 CRITICAL HABITAT

The proposed project **is not likely to adversely affect** designated critical habitat for steelhead and green sturgeon within the Action Area. Potential adverse effects associated with the project include temporary impacts on water quality and temporary reduction in foraging areas due to turbidity generated from in-water activities. These temporary impacts are not expected to adversely affect the critical habitat for these two fish species because any effects to water quality, migration space, and foraging habitat will be temporary.

4.2.1 Critical Habitat for North American Green Sturgeon (Southern DPS)

Critical Habitat for the North American green sturgeon (southern DPS) has been designated in the San Francisco Bay, including the tidal slough within the Action Area. The slough provides several of the primary constituent elements for this species, such as food resources/abundant prey, sufficient water flow, high water quality, a diversity of depths necessary for shelter, foraging, and migration of juvenile, subadult, and adult life stages, and sediment quality (i.e., chemical characteristics) necessary for normal behavior, growth, and viability of all life stages. Installation of the culvert will not significantly modify or affect any of these constituent elements or adversely affect the value of the slough for green sturgeon.

The Proposed Action at the outfall will implement BMPs and conservation measures discussed in Section 2.2, which would avoid adverse effects to hydrology, water quality, and habitat in the slough. Additionally, construction of the outfall is not likely adversely affect any of the primary constituent elements for this species, such as water quality and diversity of depths necessary for shelter. Therefore for these reasons, construction of the outfall is not likely to adversely affect Critical Habitat for the North American green sturgeon (southern DPS).

4.2.2 Critical Habitat for Central California Coast Steelhead DPS

Critical Habitat for the Central California Coast steelhead DPS has been designated in the San Francisco Bay, including the tidal slough within the Action Area. At any given site, within designated areas of Critical Habitat, certain essential habitat features must be present for the Critical Habitat designation to apply. Essential habitat features for steelhead are: 1) juvenile rearing areas, 2) juvenile migration corridors, 3) areas for growth and development to adulthood, 4) adult migration corridors, and 5) spawning areas. These features are not present at the tidal slough within the Action Area.

Proposed Action at the outfall will implement BMPs and conservation measures discussed in Section 2.2, which would avoid adverse effects to hydrology, water quality, and habitat in the slough. Additionally, construction of the outfall is not likely adversely affect any of the primary constituent elements for this species. Therefore for these reasons, the Proposed Action is not likely to adversely affect Critical Habitat for the Central California Coast steelhead DPS.

4.3 ESSENTIAL FISH HABITAT

The proposed project **is not likely to adversely affect** EFH for the Coastal Pelagic Species, Pacific Coast Groundfish and Pacific Salmon FMPs. The project site is located within an area designated as an EFH by NMFS for the Pacific Coast Salmon Fishery Management Plan and the Pacific Coast Groundfish Fisheries Management Plan. Work at the tidal slough could affect species covered under the Pacific Coast Salmon Fishery Management Plan and the Pacific Groundfish Fishery Management Plan. Temporary effects to EFH will be avoided and/or minimized by installing a cofferdam in the outfall work area and through the implementation of BMPs.

5.0 CUMULATIVE EFFECTS

Section 7 of the FESA requires the federal action agency to provide an analysis of cumulative effects when requesting initiation of formal consultation. Cumulative effects include the effects of future State, tribal, local, or private actions not involving a federal action that are reasonably certain to occur in or adjacent to the project area. Future federal actions that are unrelated to the proposed project are not considered in this analysis, because they require separate consultation pursuant to Section 7. Federal actions may include granting a permit for a project, authorizing funds for the project, or actually implementing the project. Cumulative effects are defined as environmental change that results from the incremental effects of several projects that may be individually minor, but which become significant when considered collectively.

The federally listed species and critical habitat in the project area are species and habitat that occur in aquatic habitat and therefore, any future projects with potential effects to these species and their habitat would be subject to federal regulations. The proposed project will not contribute to cumulative effects on federally listed species or critical habitat. The outfall work is the only proposed project in the slough within the Action Area and no projects that might be permitted without federal actions (and FESA Section 7 consultations) are planned for the foreseeable future in the Action Area. Therefore, the project will not contribute to cumulative effects on federally listed species or critical habitat.

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6.0 CONCLUSIONS

This BA forms the basis for the conclusions on the effects of the proposed project on the 20 federally listed species in Table A. In addition, conclusions regarding effects on designated critical habitat for two federally listed fish species, as well as effects on EFH, are based on the information contained herein. Effect determinations are summarized below in Table B.

Table B: Effect Determinations for Federally Listed Species, Designated Critical Habitat, and Essential Fish Habitat Potentially Affected by the Proposed Project

Species or Designated Habitat	Determination	Rationale
Federally Listed Species (Endangered Species Act)		
North American green sturgeon (southern DPS)	May affect, not likely to adversely affect	Outfall modification/replacement effects will be minimized by work being restricted to times of low tide and through the implementation of BMPs and other conservation measures.
Steelhead (Central California coast DPS)	May affect, not likely to adversely affect	Outfall modification/replacement effects will be minimized by work being restricted to times of low tide and through the implementation of BMPs and other conservation measures. Species is unlikely to occur in Action Area during non-migratory time of year.
Longfin smelt	May affect, not likely to adversely affect	Outfall modification/replacement effects will be minimized by work being restricted to times of low tide and through the implementation of BMPs and other conservation measures. Species is unlikely to occur in Action Area during non-migratory time of year. No historical occurrences of longfin smelt have been recorded as part of the San Francisco Bay Study at the CDFW survey stations near the project site (CDFW 2018).
NMFS-designated Critical Habitat		
North American green sturgeon (southern DPS) critical habitat	Not likely to adversely affect	Temporary water quality and turbidity effects and reduction in migratory and foraging space due to outfall work will be short term in duration and will not adversely modify species' critical habitat.
Steelhead (Central California coast DPS) critical habitat	Not likely to adversely affect	Temporary water quality and turbidity effects and reduction in migratory and foraging space due to outfall work will be short term in duration and will not adversely modify species' critical habitat.
Essential Fish Habitat (Magnuson-Stevens Act)		
Coastal Pelagic Species, Pacific Coast Groundfish, and Pacific Salmon Fishery Management Plans (FMPs)	May affect, not likely to adversely affect	Outfall modification/replacement effects will be minimized by work being restricted to times of low tide and through the implementation of BMPs (e.g., controlling sediment and turbidity).

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APPENDIX A

SPECIES LISTS FROM U.S. FISH AND WILDLIFE SERVICE AND NATIONAL MARINE FISHERIES SERVICE

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: February 14, 2020
Consultation Code: 08ESMF00-2020-SLI-1054
Event Code: 08ESMF00-2020-E-03349
Project Name: San Leandro Treatment Wetland Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-1054

Event Code: 08ESMF00-2020-E-03349

Project Name: San Leandro Treatment Wetland Project

Project Type: LAND - RESTORATION / ENHANCEMENT

Project Description: The City of San Leandro owns and operates a wastewater treatment facility located at 3000 Davis Street, San Leandro, CA, called the Water Pollution Control Plant (WPCP). The project will convert the wastewater storage basin into a multi-benefit treatment wetland to improve operational capacity of the WPCP, anticipate future nutrient regulations, enhance habitat quality, and adapt to rising seas.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.71503001332267N122.19514332649626W

Counties: Alameda, CA

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
San Bruno Elfin Butterfly *Callophrys mossii bayensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
California Seablite *Suaeda californica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6310	Endangered
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

NMFS SPECIES LIST

Quad Name **San Leandro**
Quad Number **37122-F2**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) - **X**
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat - **X**
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -	**X**
Chinook Salmon EFH -	**X**
Groundfish EFH -	**X**
Coastal Pelagics EFH -	**X**
Highly Migratory Species EFH -	

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -

MMPA Pinnipeds - **X**

Dan Sidle

From:	NMFSWCRCA Specieslist - NOAA Service Account <nmfswcrca.specieslist+canned.response@noaa.gov>
Sent:	Friday, February 14, 2020 1:58 PM
To:	Dan Sidle
Subject:	Re: NMFS Species Request for San Leandro Treatment Wetland Project, City of San Leandro, Alameda County

Receipt of this message confirms that NMFS has received your email to nmfswcrca.specieslist@noaa.gov. If you are a federal agency (or representative) and have followed the steps outlined on the California Species List Tools web page (http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html), you have generated an official Endangered Species Act species list.

Messages sent to this email address are not responded to directly. For project specific questions, please contact your local NMFS office.

Northern California/Klamath (Arcata) 707-822-7201

North-Central Coast (Santa Rosa) 707-387-0737

Southern California (Long Beach) 562-980-4000

California Central Valley (Sacramento) 916-930-3600

APPENDIX D: REQUEST FOR VERIFICATION OF JURISDICTIONAL DELINEATION

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

April 7, 2020

Katerina Galacatos
South Branch Chief
U.S. Army Corps of Engineers
450 Golden Gate Avenue, 4th Floor
San Francisco, California 94102

Subject: Request for Verification of Jurisdictional Delineation, Water Pollution Control Plant Project Study Site, City of San Leandro, Alameda County, California

Dear Ms. Galacatos:

On behalf of the City of San Leandro Public Works Department (City), LSA is requesting verification of the extent of U.S. Army Corps of Engineers (Corps) jurisdiction under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act on the Water Pollution Control Plant Project Study Site in the City of San Leandro, Alameda County. This letter reports the results of a delineation performed by LSA of the potential extent of waters of the United States, including wetlands, on the study site.

The City proposes to decommission a constructed wastewater treatment pond and create an enhanced denitrification treatment wetland composed of both open water wetland areas and upland transition, wet-meadow ecotone habitat. The wetland habitat will be enhanced by planting native riparian and wetland plants.

SITE DESCRIPTION

The approximate 11.8-acre Project Study Site is located within the northern boundary of the City of San Leandro, east of the Oakland International Airport and west of Interstate 880, at the western end of Davis Street, and with a site address of 3000 Davis Street. The Project Study Site is roughly bounded on the north by a segment of the Bay Trail and on the south by an estuary extension of the San Francisco Bay and comprises portions of Alameda County Assessor's Parcel 01-257-103. The site is situated within un-sectioned lands in Township 2 South, Range 3 West on the San Leandro, California 7.5-minute U.S. Geological Survey quadrangle, and is centered at 37.7145° North Latitude and 122.1980° West Longitude. Figures 1 and 2 (attached) depict the regional location and study site location, respectively.

The City of San Leandro (City) owns and operates a wastewater treatment facility located at 3000 Davis Street, which is called the Water Pollution Control Plant (WPCP). The WPCP was originally constructed in 1938, and several expansions and modifications have occurred since then. The WPCP is designed to treat 7.6 million gallons per day (MGD) (average dry weather flow) from residential and commercial properties and discharges the effluent into the San Francisco Bay via the East Bay Dischargers Authority (EBDA) discharge facility. Average dry weather flow is about 5 MGD.

The Project Study Site includes a 4.3-acre storage basin and adjacent upland areas owned by the City and managed by the San Leandro WPCP (Figure 3). The triangular-shaped basin is located at the western end of the WPCP (Figure 3). The basin is bordered on the south and east by a tidal slough with direct connection to the San Francisco Bay, and on the north by the Oakland International Airport and the Metropolitan Golf Links course. The San Francisco Bay Trail runs along the northwestern edge of the basin. Other surrounding land uses include a gun club (property owned by the City), a waste transfer facility, and the Oyster Bay Regional Shoreline Area (a 194-acre regional park operated by the East Bay Regional Park District). The storage basin maintains the physical appearance of an active salt pond, which is void of vegetation in all areas except the perimeter of the basin, with plant assemblages consistent with other heavily disturbed sites along the San Francisco Bay.

The Project Study Site is accessed through the WPCP at 3000 Davis Street.

Vegetation

Vegetation within the Project Study Site includes salt marsh vegetation along the tidal slough and basin and trees, shrubs, and ruderal (weedy) plants along the banks of the basin, levee, and access road that surrounds the basin. Trees growing on the site consist of primarily ornamental species, such as acacia (*Acacia* sp.) and olive (*Olea europaea*), but at least one small native coast live oak (*Quercus agrifolia*) and native willow (*Salix* sp.) were observed along the bank of the basin. Shrubs observed include coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), Himalayan blackberry (*Rubus armeniacus*), and various ornamental shrubs. The non-native ruderal and annual grassland vegetation includes several grasses and forbs, such as pampas grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), wild oats (*Avena* sp.), brome (*Bromus* sp.), Italian rye grass (*Festuca perennis*), bristly ox-tongue (*Helminthotheca echioides*), cheeseweed (*Malva parviflora*), and short-pod mustard (*Hirschfeldia incana*). A small patch of native blue wild rye (*Elymus glaucus*) was also observed along the upper bank of the slough. Appendix A provides a list of the plant species observed during LSA's survey.

Vegetation is sparse within the tidal slough and lower banks of the levee. Plants observed along the tidal slough consist of: pickleweed (*Salicornia pacifica*), fleshy jaumea (*Jaumea carnosa*), and cordgrass (*Spartina* sp.) along the lower tidal zone; saltgrass (*Distichlis spicata*) and marsh gumplant (*Grindelia stricta* var. *angustifolia*) along the middle tidal zone; and upland vegetation, such as pampas grass, fennel, and coyote brush, along the top of the slough's levee.

Soils

Soils on the project site are mapped as *Xeropsamments, fill* and *Xerorthents*, *clayey* (UC Davis SoilWeb 2020). Neither soil is listed as hydric, except for depressions on the *Xeropsamments, fill*. Imported fill materials have been used to construct the wastewater treatment pond berms and the rock rip-rap facing of the berm along the estuary.

Hydrology

The Project Study Site includes a wastewater treatment pond that formerly drained to the San Francisco Bay estuary through a flashboard controlled culvert, which is now plugged by tidal sediments, and an un-named estuary of the San Francisco Bay. The San Francisco Bay is a tidal Traditional Navigable Water of the United States.

REGULATORY BACKGROUND

Clean Water Act Jurisdiction

The field investigations of potential jurisdictional wetlands were conducted using the routine determination method provided in the Corps Wetlands Delineation Manual (Environmental Laboratory 1987) and the revised procedures in the Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region (Version 2.0) (Arid West Supplement; U.S. Army Corps of Engineers 2008). This methodology entails examination of specific sample points within potential wetlands for hydrophytic vegetation, hydric soils, and wetland hydrology. By the federal definition, all three parameters must be present for an area to be considered a wetland.

Hydrophytic plant species are listed by the National Wetland Plant List (Lichvar et al. 2016). The National List identifies five categories of plants according to their frequency of occurrence in wetlands. The categories are:

Obligate wetland plants (OBL)	Plants that occur almost always in wetlands
Facultative wetland plants (FACW)	Plants that usually occur in wetlands
Facultative plants (FAC)	Plants that are equally likely to occur in wetlands or non-wetlands
Facultative upland plants (FACU)	Plants that usually occur in uplands
Obligate upland plants (UPL)	Plants that occur almost always in non-wetlands

An area is generally considered to have hydrophytic vegetation when more than 50 percent of the dominant species in each stratum (tree, shrub, and herb) are in the obligate wetland, facultative wetland, or facultative categories.

Hydric soils are defined by criteria set forth by the National Technical Committee for Hydric Soils (NTCHS). These criteria are given in the Wetland Delineation Manual Supplement and are based on depth and duration of soil saturation. Hydric soils are commonly identified in the field by using indirect indicators of saturated soil, technically known as redoximorphic features. These features are caused by anaerobic, reduced soil conditions that are brought about by prolonged soil saturation. The most common redoximorphic features are distinguished by soil color, which is strongly influenced by the frequency and duration of soil saturation. Hydric soils tend to have dark (low chroma) colors that are often accompanied by reddish mottles (iron mottles), reddish stains on root channels (oxidized rhizospheres), or gray colors (gleying). The Arid West Supplement contains descriptions of numerous federally recognized hydric soil indicators.

Under natural conditions, development of hydrophytic vegetation and hydric soils are dependent on a third characteristic, wetland hydrology. This criterion is met if the area experiences inundation or soil saturation to the surface for a period equal to at least 5 percent of the growing season (about 14 days in the region of the study site) in a year of median rainfall. In most cases, this criterion can only be measured directly by monitoring the site through an entire wet season.

Rivers and Harbors Act Jurisdiction

The Corps administers Section 10 of the Rivers and Harbors Act, which prohibits "the unauthorized obstruction or alteration of any navigable water of the United States." Obstruction or alteration includes construction either in or over a navigable water, excavation or deposition of material, or any other work affecting the course, location, condition, or capacity of such waters.

Section 10 jurisdiction extends shoreward to the line of Mean High Water (MHW) and includes areas behind dikes that are below the MHW line. Areas that have been filled to elevations above MHW are not subject to Section 10 jurisdiction, provided that the filling was carried out under a Corps permit.

FIELD METHODS

LSA certified wetland delineator and senior biologist Bernhard Warzecha investigated the site on February 6, 2020, during times of low tide.

The high tide line was mapped using a global positioning system (GPS) receiver with sub-meter accuracy capabilities. The high tide line is the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line was determined by a line of scum, fine shell, and debris deposited in the rip-rap, and other physical markings and characteristics, including vegetation lines, and interpretation of aerial photography.

RESULTS

CWA Jurisdiction (Section 404)

LSA observed and GPS-mapped a continuous high tide line along the slough levee, defining the potential upper limit of jurisdictional Other Waters of the United States. Portions of the area below the high tide line support sufficient hydrophytic vegetation cover to meet jurisdictional wetland criteria and are mapped separately from the Other Waters. The potential area of jurisdictional Other Waters within the Project Study Site is approximately 0.09 acre, and the potential area of jurisdictional wetland within the Project Study Site is approximately 0.13 acre. These potential jurisdictional features are mapped on Figure 3, attached.

Rivers and Harbors Act Jurisdiction (Section 10)

Rivers and Harbors Act Section 10 jurisdiction applies to all areas below the elevation of MHW. Based on the Alameda NOAA tide gauge, the elevation of MHW is 5.98 feet above mean lower-low water, which is equivalent to 5.75 feet in the NAVD88 datum. This elevation approximately corresponds to the upper limits of the unvegetated mud flats of the tidal slough, as shown on Figure 3. The potential limit of Section 10 jurisdiction within the Project Study Site is approximately 2.2 acres and is mapped on Figure 3.

Other Observations

The 4.3-acre treatment basin at the WPCP was constructed in 1972 and is lined with an impermeable clay. Since the mid-1970s, the plant has discharged through the EBDA common outfall and the basin has been maintained for emergency storage. The basin is identified as a component of the waste treatment system for the WPCP within EBDA's National Pollutant Discharge Elimination System (NPDES) permit, which establishes compliance requirements under the federal Clean Water Act and state water quality regulations. The treatment pond has been continually maintained to the present time. As such, the storage basin qualifies as an exempt feature under the Clean Water Act.

No other potential jurisdictional features were identified on the Project Study Site.

CONCLUSIONS

Potential Clean Water Act Section 404 jurisdictional features and potential Rivers and Harbors Act Section 10 jurisdictional features identified on the Project Study Site are as follows:

- Wetlands above the MHW elevation with a potential jurisdictional area of approximately 0.13 acre;

- Wetlands below the MHW elevation with a potential jurisdictional area of approximately 0.03 acre;

- Other Waters of the United States within the mud flats of the tidal slough between the MHW elevation and the high tide line (HTL) with a potential jurisdictional area of approximately 0.09 acre; and

- Other Waters of the United States within mud flats below the MHW elevation with a potential jurisdictional area of approximately 2.17 acres.

Therefore, the total extent of potential jurisdictional waters of the United States in the Project Study Site is approximately 2.42 acres, consisting of 0.16 acre of wetlands and 2.26 acres of Other Waters. Potential jurisdictional features and project site boundaries are mapped on Figure 3, which is attached.

The findings and conclusions presented in this report, including the location and extent of other waters subject to regulatory jurisdiction, represent the professional opinion of LSA. These findings and conclusions should be considered preliminary until verified by the Corps.

Please contact me (dan.sidle@lsa.net) or Ross Dobberteen, Principal in Charge (ross.dobberteen@lsa.net), to schedule a verification visit.

Sincerely,

LSA Associates, Inc.

Dan Sidle
Associate/Senior Biologist

Attachment: Figure 1: Study Area Location
Figure 2: Study Area
Figure 3: Potential Waters of the United States
Appendix A: Plant Species Observed at the San Leandro Treatment Wetland Project February 5, 2020

cc: Hayes Morehouse, Administrative Analyst II, City of San Leandro Public Works, Water Pollution Control Plant, 3000 Davis Street, San Leandro, CA 94577

Justin Jenson, Plant Manager, City of San Leandro Public Works, Water Pollution Control Plant, 3000 Davis Street, San Leandro, CA 94577

Lucas Paz, Principal Hydrologist, Terraphase Engineering Inc., 1404 Franklin Street, Suite 600, Oakland, CA 94612

REFERENCES

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical report Y-87-1, U.S. Army Engineers Waterways Experiment Station, Vicksburg, Mississippi.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X. www.codot.gov/programs/environmental/wetlands/nwpl_aw_2016v1.pdf.

U.S. Army Corps of Engineers (Corps). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

LSA

FIGURE 1

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San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Study Area Location

SOURCE: Use Upper and Lower Case Fonts (MM/YY)

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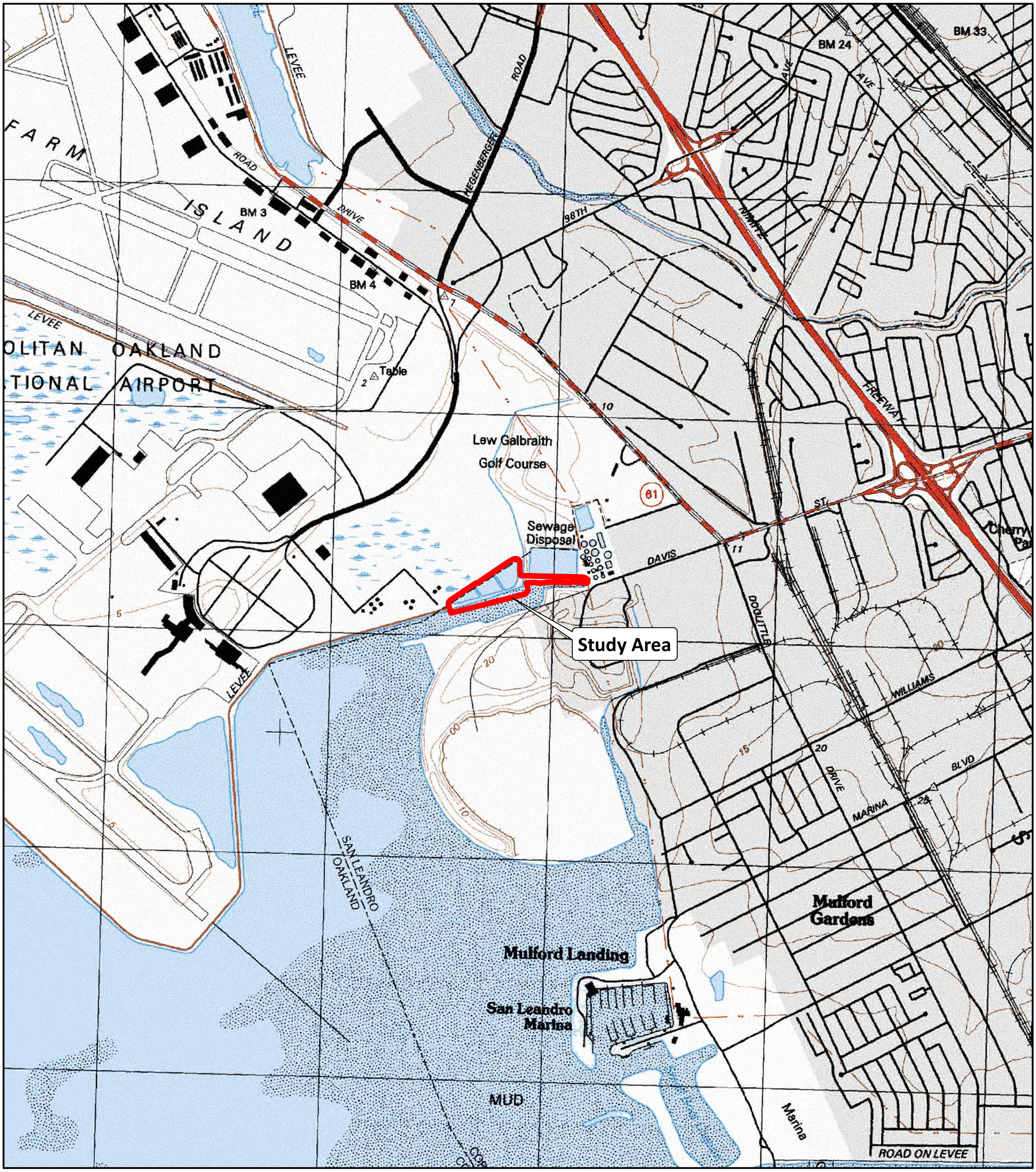

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FIGURE 2

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SOURCE: USGS 7.5-minute Topo Quads - *San Leandro, Calif.* (1993).

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Study Area

I:\TER2001\GIS\Maps\Delineation\Figure 2_Study Area.mxd (3/5/2020)

LSA

FIGURE 3

LEGEND

Delineation Study Area

High Tide Line (HTL)

Mean High Water (MHW) at 5.75 NAVD88

1 inch = 150 feet

0 75 150
FEET

Potential Waters of the United States

Wetlands

Wetland above MHW (Sec. 404 only)	0.13 ac.
Wetland below MHW (Sec. 404 and Sec. 10)	0.03 ac.

Other Waters

Mud Flat between MHW and HTL (Sec. 404. only)	0.09 ac.
Mud Flat below MHW (Sec. 404 and Sec. 10)	2.17 ac.

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Potential Waters of the United States

SOURCE: Towill (01/2020); USGS LiDAR (11/2010); Alameda County LiDAR (07/2006);Google Maps Sat Aerial (04/2019).

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APPENDIX A

Table A-1. Plant Species Observed at the San Leandro Treatment Wetland Project February 5, 2020

Family	Species Name	Common Name	Habitat
NATIVE			
Asteraceae	*Baccharis pilularis*	coyote brush	
	Erigeron canadensis	horseweed	
	Grindelia stricta var. *angustifolia*	marsh gumplant	TM
	Jaumea carnosa	fleshy jaumea	TM
Brassicaceae	*Cardamine oligosperma*	bitter-cress	
Chenopodiaceae	*Salicornia pacifica*	pickleweed	TM
Fabaceae	*Vicia* sp.	vetch	
Fagaceae	*Quercus agrifolia* var. *agrifolia*	coast live oak	
Poaceae	*Distichlis spicata*	saltgrass	TM
	Elymus glaucus	blue wildrye	
Rosaceae	*Heteromeles arbutifolia*	toyon	
Salicaceae	*Salix* sp.	willow	
Typhaceae	*Typha* sp.	cattail	
NON-NATIVE			
Aizoaceae	*Carpobrotus edulis*	hottentot-fig	
Apiaceae	*Conium maculatum*	poison-hemlock	
	Foeniculum vulgare	fennel	
Asteraceae	*Cirsium vulgare*	bull thistle	
	Dittrichia graveolens	stinkwort	
	Helminthotheca echioides	bristly ox-tongue	
Brassicaceae	*Hirschfeldia incana*	short-pod mustard	
	Raphanus sativus	wild radish	
Chenopodiaceae	*Amaranthus* sp.	amaranth	
Fabaceae	*Acacia* sp.	acacia	
	Genista monspessulana	French broom	
	Melilotus albus	white sweet clover	
	Trifolium sp.	clover	
Geraniaceae	*Erodium* sp.	filaree	
	Geranium dissectum	cutleaf geranium	
Malvaceae	*Malva parviflora*	cheeseweed	
Oleaceae	*Olea europaea*	olive	

Family	Species Name	Common Name	Habitat
Oxalidaceae	*Oxalis pes-caprae*	Bermuda buttercup	
Plantaginaceae	*Plantago coronopus*	cutleaf plantain	
Poaceae	*Avena* sp.	Wild oats	
	Bromus sp.	brome	
	Cortaderia sp.	pampas grass	
	Festuca perennis	Italian rye grass	
	Spartina sp.	cordgrass	TM
	Stipa miliaceae	smilo grass	
Rhamnaceae	*Rhamnus* sp.	ornamental buckthorn	
Rosaceae	*Rubus armeniacus*	Himalayan blackberry	

TM = Tidal Marsh

APPENDIX E: U.S. ARMY CORPS OF ENGINEERS APPROVED JURISDICTIONAL DELINEATION

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

December 16, 2020

Regulatory Division

Subject: File Number 2019-00477S

Mr. Ian Wren
P.O. Box 31896
San Francisco, California 94131
ian@wrenws.com

Dear Mr. Wren:

This correspondence is in response to your submittal of June 19, 2020, on behalf of the City of San Leandro, Public Works Department, requesting an approved jurisdictional determination of the extent of waters of the United States occurring on an approximately 11.8-acre site, comprising the Water Pollution Control Plant, located at 3000 Davis Street, in the City of San Leandro, Alameda County, California (lat. 37.7145º, long. -122.1980º).

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States; or below the high tide line in tidal waters of the United States; or within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq*.). Waters of the United States generally include the territorial seas; all traditional navigable waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally; and wetlands directly abutting such tributaries.

All proposed structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States, typically require Department of the Army authorization and the issuance of a permit under Section 10 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. § 403 *et seq*.). Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future use to transport interstate or foreign commerce.

The enclosed delineation map titled “SPN-2019-00407S, City of San Leandro Water Pollution Control Plant, Alameda County, California,” in one sheet, date certified December 2, 2020, accurately depicts the extent and location of wetlands, and other waters of the United States, and navigable waters of the United States within the boundary area of the site that are subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. This approved jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of September 17, 2020, a review of available digital photographic imagery, and a review of other data included in your submittal. This approved jurisdictional determination will expire in five years from the date of this letter unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date. Jurisdictional Section 10 waters within the boundary area of the site include the tidal waters of San Francisco Bay, extending shoreward to the plane of mean high water. Section 404 waters within the boundary area of the site include San Francisco Bay, extending shoreward to the high tide line, as well as tidal wetlands that are directly adjacent to San Francisco Bay. The high tide line is defined by a debris rack line along the shore. The lateral extent of the tidal wetland is defined by the presence of hydrophytic vegetation, hydric soils, and hydrology. The basis for this approved jurisdictional determination is further explained in the enclosed *Approved Jurisdictional Determination Form*. This approved jurisdictional determination is presumed to be consistent with the official interagency guidance of June 5, 2007, interpreting the Supreme Court decision *Rapanos v. United States*, 126 S. Ct. 2208 (2006).

The enclosed delineation map further depicts the extent and location of elements of a waste water treatment system within the boundary area of the site that are **not** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act, per 33 CFR Sec. 328(a). Waters of the United States do not generally include non-tidal drainage and irrigation ditches excavated on dry land; artificially irrigated areas which would revert to upland if the irrigation ceased; artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing; artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons; and water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel, unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of a waters of the United States (51 Fed. Reg. 41,217; Nov. 13, 1986). Based on a case-by-case analysis, the U.S. Army Corps of Engineers may elect to not exert jurisdiction over these categories of water bodies. This delineated water body, however, may be considered as a "waters of the State" and, therefore, subject to regulation by the California Regional Water Quality Control Board, San Francisco Bay Region, under the Porter-Cologne Water Quality Control Act, as amended (California Water Code § 1300 *et seq*.).

You are advised that the approved jurisdictional determination may be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. § 331 (65 Fed. Reg. 16,486; Mar. 28, 2000) and outlined in the enclosed flowchart and *Notification of Administrative Appeal Options, Process, and Request for Appeal* (NAO-RFA) Form. If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to this office for reconsideration of this decision. If you do not provide new information to this office, you may elect to submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process; the completed NAO-RFA Form must be submitted directly to the Appeal Review Officer at the address specified on the NAO-RFA Form. You will relinquish all rights to a review or an appeal unless this office or the Division Engineer receives new information or a completed NAO-RFA Form within 60 days of the date on the NAO-RFA Form. If you intend to accept the approved jurisdictional determination, you do not need to take any further action associated with the Administrative Appeal Process.

You may refer any questions on this matter to Frances Malamud-Roam of my Regulatory staff by telephone at 415-503-6792 or by e-mail at frances.p.malamud-roam@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website:
http://www.spn.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

Sahrye Cohen

Sahrye Cohen
North Branch Chief, Regulatory Division

Enclosures

Copy Furnished electronically (w/ encls):

Justin Jenson, Plant Manager, City of San Leandro Public Works (jjenson@sanleandro.org)

Copy Furnished (w/ encl 1 only):

CA RWQCB, Oakland, CA (Agnes Farres, Agnes.Farres@waterboards.ca.gov)

Copy Furnished (w/o encls):

U.S. EPA, San Francisco, CA (Attn: Jennifer Siu (siu.jennifer@epa.gov)

LSA

LEGEND

- Delineation Study Area
- High Tide Line (HTL)
- Mean High Water (MHW) at 5.75 NAVD88
- Storage Basin (6.9 ac.)-excluded (b12 water)

1 inch = 150 feet

0 75 150 FEET

Potential Waters of the United States

Wetlands

Wetland above MHW (Sec. 404 only)	0.13 ac.
Wetland below MHW (Sec. 404 and Sec. 10)	0.03 ac.

Other Waters

Mud Flat between MHW and HTL (Sec. 404. only)	0.09 ac.
Mud Flat below MHW (Sec. 404 and Sec. 10)	2.17 ac.

SOURCE: Towill (01/2020); USGS LiDAR (11/2010); Alameda County LiDAR (07/2006);Google Maps Sat Aerial (04/2019).

I:\TER2001\GIS\Maps\Delineation\Figure 3_Potential Waters of the United States.mxd (4/7/2020)

Approved Jurisdictional Determination
SPN-2019-00477S
City of San Leandro Water
Pollution Control Plant
Alameda County, California
(lat: 37.714689°N, long: -122.197708°W)

US Army Corps of Engineers®

Study Area Boundary

Waters identified within the Study Area Boundary include waters that are jurisdictional pursuant to Section 404 of the Clean Water Act of 1972 and Section 10 of the Rivers and Harbor Act of 1899, and waters that are not jurisdictional pursuant to Section 404 of the Clean Water Act of 1972. Accurate as depicted in legend.

1 Page

Date: 2 December 2020

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD):
ORM Number: SPN-2019-00477
Associated JDs: N/A or ORM numbers and identifiers (e.g. HQS-2020-00001-MSW-MITSITE)
Review Area Location[1]:
State/Territory: CA City: County/Parish/Borough: Alameda County
Center Coordinates of Review Area: Latitude 37.714689 Longitude -122.197708

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- ☒ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in section II.B).
- ☒ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size	§ 10 Criteria	Rationale for § 10 Determination
2019-00477-ow10	2.17 acres	(a)(1) Water is also subject to Sections 9 or 10 of the Rivers and Harbors Act - RHA Tidal water is subject to the ebb and flow of the tide	Waters below MHW (5.75 feet NAVD88)

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters)[3]

(a)(1) Name	(a)(1) Size	(a)(1) Criteria	Rationale for (a)(1) Determination
2019-00477-ow-non10	0.09 acres	(a)(1) Territorial Seas	Subtidal area above MHW and below HTL
2019-00477-ow10	2.17 acres	(a)(1) Water is also subject to Sections 9 or 10 of the Rivers and Harbors Act - RHA Tidal water is subject to the ebb and flow of the tide	Waters below MHW (5.75 feet NAVD88)

Tributaries ((a)(2) waters):

(a)(2) Name	(a)(2) Size	(a)(2) Criteria	Rationale for (a)(2) Determination
N/A	N/A	N/A	N/A

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):

(a)(3) Name	(a)(3) Size	(a)(3) Criteria	Rationale for (a)(3) Determination
N/A	N/A	N/A	N/A

Adjacent wetlands ((a)(4) waters):

(a)(4) Name	(a)(4) Size	(a)(4) Criteria	Rationale for (a)(4) Determination
2019-00477_wet-10_404	0.03 acres	(a)(4) Wetland abuts an (a)(1)-(a)(3) water	Wetland abuts San Francisco Bay
2019-00477_wet-404	0.13 acres	(a)(4) Wetland abuts an (a)(1)-(a)(3) water	Wetland abuts San Francisco Bay

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12))[4]:

Exclusion Name	Exclusion Size	Exclusion[5]	Rationale for Exclusion Determination
2019-00477-ow-b12exempt	6.9 acres	(b)(12) Waste treatment system	Basin has been used continuously as part of the waste water treatment plant and is cited in NPDES permit for the San Leandro WPCP

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

_x_ Information submitted by, or on behalf of, the applicant/consultant: *Technical Memo: Request for Verification of Jurisdictional Delineation, Water Pollution Control Plant Project Study Site, City of San Leandro, Alameda County, California, prepared by LSA and dated April 7, 2020, updated October 1, 2020, is* sufficient for purposes of this AJD.
Rationale: *N/A or describe rationale for insufficiency (including partial insufficiency).*

_x_ Data sheets prepared by the Corps: *September 17, 2020*

_x_ Photographs: *(NA, aerial, other, aerial and other) Technical Memo, .*

_x_ Corps Site visit(s) conducted on: *September 17, 2020*

___ Previous Jurisdictional Determinations (AJDs or PJDs): *ORM Number(s) and date(s).*

___ Antecedent Precipitation Tool: *provide detailed discussion in Section III.B.*

_x_ USDA NRCS Soil Survey: *accessed through ORM*

_x_ USFWS NWI maps: *accessed through ORM.*

___ USGS topographic maps: *Title(s) and/or date(s).*

Other data sources used to aid in this determination:

Data Source (select)	Name and/or date and other relevant information
USGS Sources	N/A.
USDA Sources	N/A.
NOAA Sources	N/A.

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

USACE Sources	N/A.
State/Local/Tribal Sources	N/A.
Other Sources	N/A.

B. Typical year assessment(s): N/A

C. Additional comments to support AJD: A copy of the Water Board NPDES Permit (No. CA0037869) for the East Bay Dischargers Authority (EBDA) that includes this project site is in the project folder.

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
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APPENDIX F: CULTURAL RESOURCES REPORT

LSA

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

January 8, 2021

Mr. Hayes Morehouse
City of San Leandro
Public Works – Water Pollution Control Plant
3000 Davis Street
San Leandro, California 94577

Subject: Negative Cultural Resource Survey Report for an 11.8-acre portion of the Water Pollution Control Plant at 3000 Davis Street, San Leandro, Alameda County, California (TER2001)

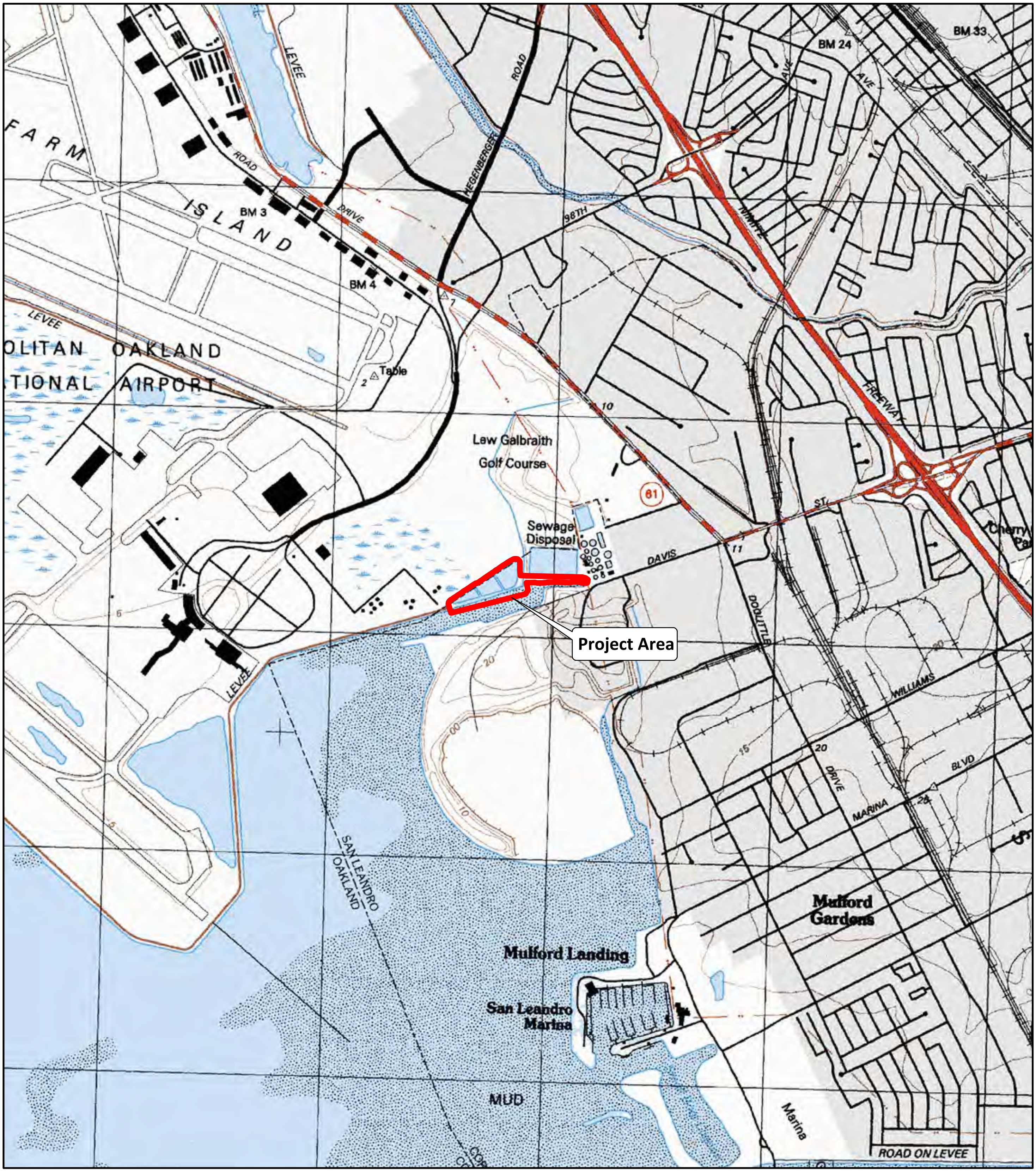
Dear Mr. Morehouse:

This letter presents the results of the cultural resource survey conducted by LSA for an 11.8-acre portion of the City's Water Pollution Control Plant in San Leandro (City), Alameda County (County), California. All work herein has been completed per California Environmental Quality Act (CEQA) requirements (as amended January 1, 2021); Public Resources Code (PRC) Division 13 (Environmental Quality), Chapter 2.6, Sections 21083.2 (Archaeological Resources) and 21084.1 (Historical Resources); and the State *CEQA Guidelines* (as amended December 1, 2020), California Code of Regulations Title 14, Chapter 3, Article 5, Section 15064.5 (Determining the Significance of Impacts on Historical and Unique Archaeological Resources). Sites determined important under CEQA are eligible for listing on the California Register of Historical Resources. No cultural resources were identified during the survey for this project.

PROJECT LOCATION AND DESCRIPTION

The project area consists of an 11.8-acre portion of the City's Water Pollution Control Plant (WPCP) that encompasses a 4.3-acre basin that will be converted from a wastewater storage basin into a multi-benefit treatment wetland in order to improve operational capacity of the WPCP, anticipate future nutrient regulations, enhance habitat quality, and adapt to rising seas. For this conversion, the project proposes to divert a portion of the WPCP effluent for denitrification prior to release into a shallow wetland treatment basin. The treatment wetland will be bermed and lined with geotextile or similar material to maximize retention time and minimize flow in order to enhance denitrification and photolysis of organic contaminants such as pharmaceuticals and pesticides. Afterward, the denitrified wastewater will discharge into the San Francisco Bay (Bay) at the existing outfall located at the western edge of the basin.

An existing basin at the western edge of the WPCP is proposed for use in creating the new bermed and geotextile-lined treatment wetland. The project area is on the east side of the Bay, east of Oakland International Airport and south of the Lew Galbraith Golf Course (Figure 1). The project area is just north of Oyster Bay Regional Shoreline, which itself is just north of Mulford Landing and San Leandro Marina.



LSA

FIGURE 1

0 1000 2000
FEET

San Leandro Treatment Wetland Project
City of San Leandro Water Pollution Control Plant
San Leandro, Alameda County, California

Project Area

SOURCE: USGS 7.5-minute Topo Quads - *San Leandro, Calif.* (1993).

I:\TER2001\GIS\Maps\Delineation\Figure 2_Study Area.mxd (3/5/2020)

The project area is situated at the northwestern corner of the San Leandro city boundary adjacent to the Oakland city boundary. Specifically, the project is on the north side of Davis Street near its western terminus, and is 2,000 feet (ft) west of the junction of Davis Street and Doolittle Drive, and 1.0 mile west of Davis Street and Interstate 880. The project is depicted on the United States Geological Survey (USGS) *San Leandro, California*, 7.5-minute quadrangle map (USGS 1993) in Township 2 South, Range 3 West, Section 33, Mount Diablo Baseline and Meridian, on what was once the northwestern portion of the *Rancho San Leandro* land grant (Beck and Haase 1974:30) (Figure 1). Project elevations are less than 15 ft above sea level.

METHODOLOGY

Record Search

On December 9, 2020, a record search to identify previously recorded prehistoric and historic cultural resources and prior cultural resource surveys within 0.25 mile of the project area was conducted by Jessika Akmenkalns at the Northwestern Information Center (NWIC) of the California Historical Resources Information System (CHRIS) at California State University, Sonoma.

Native American Consultation

LSA assisted the City by initiating Native American consultation for this project. On November 10, 2020, the Native American Heritage Commission (NAHC) was contacted for a search of the Sacred Lands File (SLF) and a list of Native American contacts for the area. It is the City's responsibility to continue consultation per Assembly Bill 52, as necessary for CEQA-level projects.

Field Survey

On November 13, 2020, LSA senior archaeologist Andrew Pulcheon conducted a pedestrian survey of accessible portions of the project area. Accessible areas were traversed by walking intuitive linear transects separated by 5–7 meters (m). Inundated areas covered with effluent were not surveyed.

RESULTS

Record Search

The record search identified no previously recorded cultural resources in or within 0.25 mile of the project area (refer to Attachment C). The record search indicated that four prior cultural resource studies included at least a portion of the current project area within their boundaries. All of these studies were surveys (Chavez 1990; Marlow et al. 2004; Billat 2006; Lenzi et al. 2018). Chavez (1990) and Marlow et al. (2004) both cover a large area including the entire current project area, large portions of the golf course to the north, and Oyster Bay Regional Shoreline to the south. Billat (2006) covered just a small area of the southwest corner of the current WPCP project area, while Lenzi et al. (2018) surveyed the WPCP area that now contains solar panels just north of the current project area. Notably, Lenzi et al. (2018) provide an excellent prehistoric, ethnographic, and historic context for the area, and analyze historic maps identifying the disturbed intertidal nature of the area at the western terminus of Davis Street. This research shows that the current project area was surveyed for cultural resources at least twice in the past.

The record search also shows that another eight cultural studies occurred outside but within 0.25 mile of the current WPCP project area. These eight studies include survey (6), monitoring (1), and State Historic Preservation Officer (SHPO) concurrence studies. Another 28 overview studies provided by the NWIC are also listed in Table A. All studies are listed by S Number in Table A while the record search is provided as Attachment C

Table A: Results of Record Search

Reference	S No.[1]	Type of Study
Previous Studies in the Project Area		
Chavez (1990)	12439	Survey
Marlow et al. (2004)	29589	Survey
Billat (2006)	31316	Survey
Lenzi et al. (2018)	50779	Survey
Previous Studies within ½ Mile of the Project Area		
S-1786, 15786, 33293, 33293a, 33293b, 33293c, 33293d, 52020		
Overview Studies		
S-848, 1784, 2458, 2458, 2458a, 2458b, 2458c, 2458d, 2458e, 7903, 9462, 9583, 9795, 14621, 15529, 16660, 17773, 17835, 18217, 20395, 30204, 32596, 33239, 33600, 48927, 49780, 49780a, 52028		

[1] S is the Information Center code for “Study.”
References are listed in the References section and by S number in Attachment C.

Historic maps depicted in Lenzi et al. (2018:10-13) clearly show the portion of the WPCP with solar panels and the current WPCP project area to have been situated within what was once a broad marshy area, or intertidal mudflat, which existed around the edge of the Bay long ago. These maps indicate that the current landform is higher in elevation than the original intertidal mudflat because it has been elevated with fill sediment.

Aerial photos available online (NETROnline 2021) clearly show that the western portion of the current project area where the entire pond exists was covered by water in a 1946 aerial photograph. This intertidal inundation covered almost all of the area that is currently the golf course southeast of the airport and north of the current project area. In the 1946 photograph, only the easternmost narrow linear part of the current project area was out of the water. A 1958 aerial photograph shows the area was still below water, although a berm had been extended westward through the bay in a nearly linear extension of Davis Street, with what appears to be the Bay on the south of the berm and an intertidal area on the north of the berm where the golf course and WPCP pond area were later constructed using fill. Thus, the current pond portion of the project area has been created entirely of fill material in what was originally subtidal marshland, while the eastern portion of the current project area is located at the edge of the marsh within what was once an intertidal area.

Native American Consultation

After being contacted by LSA, the NAHC responded on November 18, 2020, stating that the SLF contained no specific site information for the project area. The NAHC also provided a list of Native American contacts with knowledge of cultural resources in the area and suggested that they be contacted for information. The NAHC response and list of contacts is provided as Attachment D.

Survey

On November 13, 2020, the project area was surveyed with the result that no cultural resources were found. Selected photographs of the project area during the survey are provided (Attachment B). A description of existing project area conditions follows.

Leading west from the western terminus of Davis Street, the eastern portion of the project area is a dilapidated asphalt road that runs between an existing solar panel area on the north and what is now a narrow arm of the Bay. This narrow tidal inlet is the easternmost extent of the Bay in this area. The road appears to have been graveled prior to having once been paved with asphalt. The asphalt is heavily weathered with moderate to dense introduced grasses and ruderal (weedy) vegetation along both sides, and large shrubs and trees growing along the south side.

The road leads west to the eastern portion of the project area that is a bermed basin (pond) proposed for the converted treatment wetland. The basin contains shallow water that appears to be plant effluent. The edges of the basin are bermed with a moderate growth of introduced grasses, ruderal plants, and some shrubs, as well as a few trees. The largest tree on the basin is a conspicuous 40 ft tall eucalyptus that is growing along the middle of the northern berm. As determined from historic maps and aerial photographs, the entire pond area was once subtidal bay and has been created by bulldozing bay sediment and likely dumping some fill. For this reason, a few naturally occurring marine shells are visible in the completely disturbed sediment.

SUMMARY AND RECOMMENDATIONS

A cultural resource record search and survey of an approximately 11.8-acre area was conducted within and adjacent to a wetland basin (pond) within the San Leandro WPCP on the east side of the Bay just east of Oakland International Airport. An NAHC search of the SLF was negative for the project area. A record search, conducted at the NWIC for the project on December 9, 2020, showed that while the current project area was completely surveyed at least twice in the past, no cultural resources have been recorded. Prior reports and review of historic aerial photographs show that the project area is within what was historically intertidal marsh. Aerial photographs taken in 1946 and 1958 show that what is now the pond area was completely under water during that time, indicating that the current pond area is now highly disturbed fill sediment.

On November 13, 2020, a pedestrian survey of the project area was conducted. No cultural resources were found in the project area during the survey. The results of this research and survey indicate that intact cultural resources are highly unlikely to exist within the project area. As such, no additional cultural resource work is recommended for this project.

If archaeological resources are found during project construction, construction activities in the vicinity of the find shall be halted until a professional archaeologist can assess the nature and significance of the find. If the find is determined to be significant, additional archaeological work, including data recovery, may be necessary to record the scientifically important aspects of the resource. Once the scientifically important aspects of the resource have been recorded, construction in the vicinity of the find can resume.

If human remains are encountered at the project areas, State Health and Safety Code Section 7050.5 and State *CEQA Guidelines* Section 15064.5(e)(1) state that no further disturbance shall occur to the area of the find until the County Coroner has made a determination of origin and disposition of the human bone pursuant to PRC Section 5097.98. The County Coroner must be notified of the find immediately and shall make a determination within two working days of being notified. If the remains are determined to be Native American, the County Coroner shall notify the NAHC by phone within 24 hours, and the NAHC shall then immediately determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection and make recommendations or preferences for treatment of the remains within 48 hours of being granted access to the site. The MLD's recommendations may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials, preservation of Native American human remains and associated items in place, relinquishment of Native American human remains and associated items to the descendants for treatment, or any other culturally appropriate treatment.

If you have any questions concerning the content or intent of this letter, please contact me at (949) 553-0666 or ivan.strudwick@lsa.net.

Sincerely,

LSA Associates, Inc.

Ivan Strudwick, RPA
Associate/Archaeologist

cc: Justin Jenson, Plant Manager, City of San Leandro
Lucas Paz, Principal Hydrologist, Terraphase Engineering, Inc.
Dan Sidle, Associate/Senior Biologist, LSA

Attachments: A: References
B: Survey Photographs
C: Results of Record Search: Confidential – Not for Public Distribution
D: Native American Consultation

ATTACHMENT A

REFERENCES

Beck, Warren A., and Ynez D. Haase
1974 *Historical Atlas of California*. University of Oklahoma Press.

Billat, Lorna
2006 New Tower ("NT") Submission Packet, FCC Form 620, San Leandro Water Control Plant, BA-12476A. Earth Touch, Inc. On file, Northwestern Information Center, California State University, Sonoma. [Accession No. S-131316]

Chavez, David
1990 Cultural Resources Investigations for the Port of Oakland Phase I Dredging, Cultural Resources Evaluation. David Chavez & Associates. On file, Northwestern Information Center, California State University, Sonoma. [Accession No. S-12439]

Lenzi, Michael, Dina Ryan, Montse Osterlye, and Barb Siskin
2018 Cultural Resources Inventory Report for the San Leandro Water Pollution Control Plant Solar Project, Alameda County, California. Garcia and Associates. On file, Northwestern Information Center, California State University, Sonoma. [Accession No. S-50779]

Marlow, Adam, Allen Estes, and James Allan
2004 Archaeological Assessment of the Proposed San Leandro Recycled Water Master Plan, San Leandro, Alameda County, California. William Self & Associates. On file, Northwestern Information Center, California State University, Fullerton. [Accession No.S-50779]

National Environmental Title Research, LLC (NETROnline)
2021 Available at: https://www.NETROnline.com/viewer (accessed January 5, 2021).

United States Geological Survey (USGS)
1993. *San Leandro, California*, 7.5-minute quadrangle map.

ATTACHMENT B

SURVEY PHOTOGRAPHS

Linear eastern portion of project area with solar panel area on right (north). View to west. November 13, 2020.

Existing WPCP basin (pond) from northeast side. View to southwest. November 13, 2020.

Western portion of existing WPCP basin (pond) from middle of north side. View to southwest. November 13, 2020.

Existing WPCP basin (pond) from eastern side. View to west. November 13, 2020.

ATTACHMENT C

RESULTS OF RECORD SEARCH

CONFIDENTIAL – NOT FOR PUBLIC DISTRIBUTION

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

12/9/2020 NWIC File No.: 20-0924

Andrew Pulcheon
LSA Associates, Inc.
157 Park Place
Point Richmond, CA 94801

Re: San Leandro Treatment Wetland Project

The Northwest Information Center received your record search request for the project area referenced above, located on the San Leandro USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a one-quarter mile radius:

Resources within project area:	None
Resources within ¼-mile radius:	None
Reports within project area:	S-12439, S-29589, S-31316, S-50779; 21 Other Reports
Reports within ¼-mile radius:	S-01786, S-15786, S-33293, S-52020

Resource Database Printout (list):	☐ enclosed	☐ not requested	☒ nothing listed
Resource Database Printout (details):	☐ enclosed	☐ not requested	☒ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☐ enclosed	☐ not requested	☒ nothing listed
Report Copies:	☒ enclosed	☐ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☐ enclosed	☐ not requested	☒ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☐ not requested	☒ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

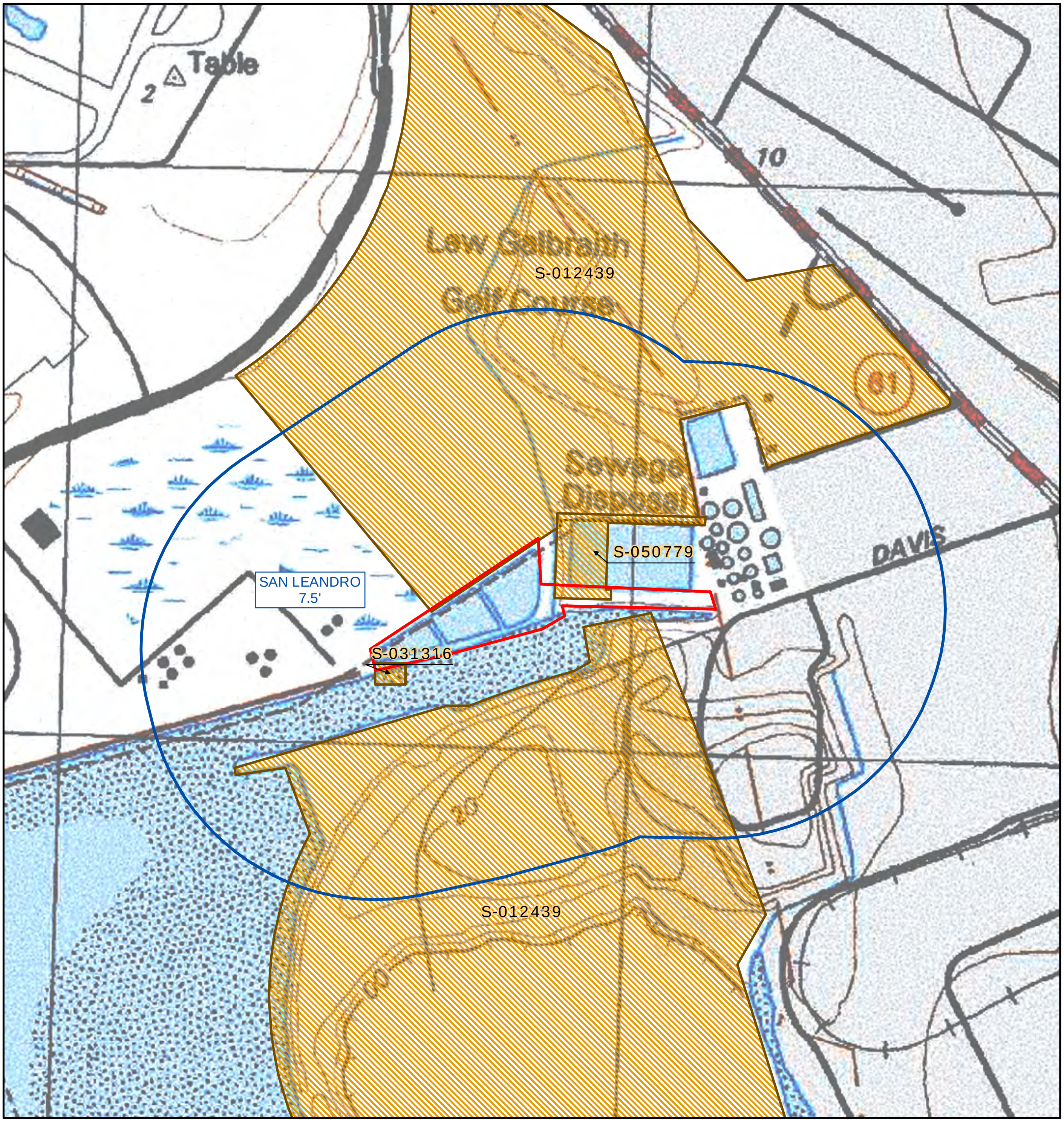
Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Jessika Akmenkalns, Ph.D.
Researcher

Report Map No. 1
San Leandro Treatment Wetland Project



Northwest Information Center

File #20-0924 9 Dec 2020 J. Akmenkalns

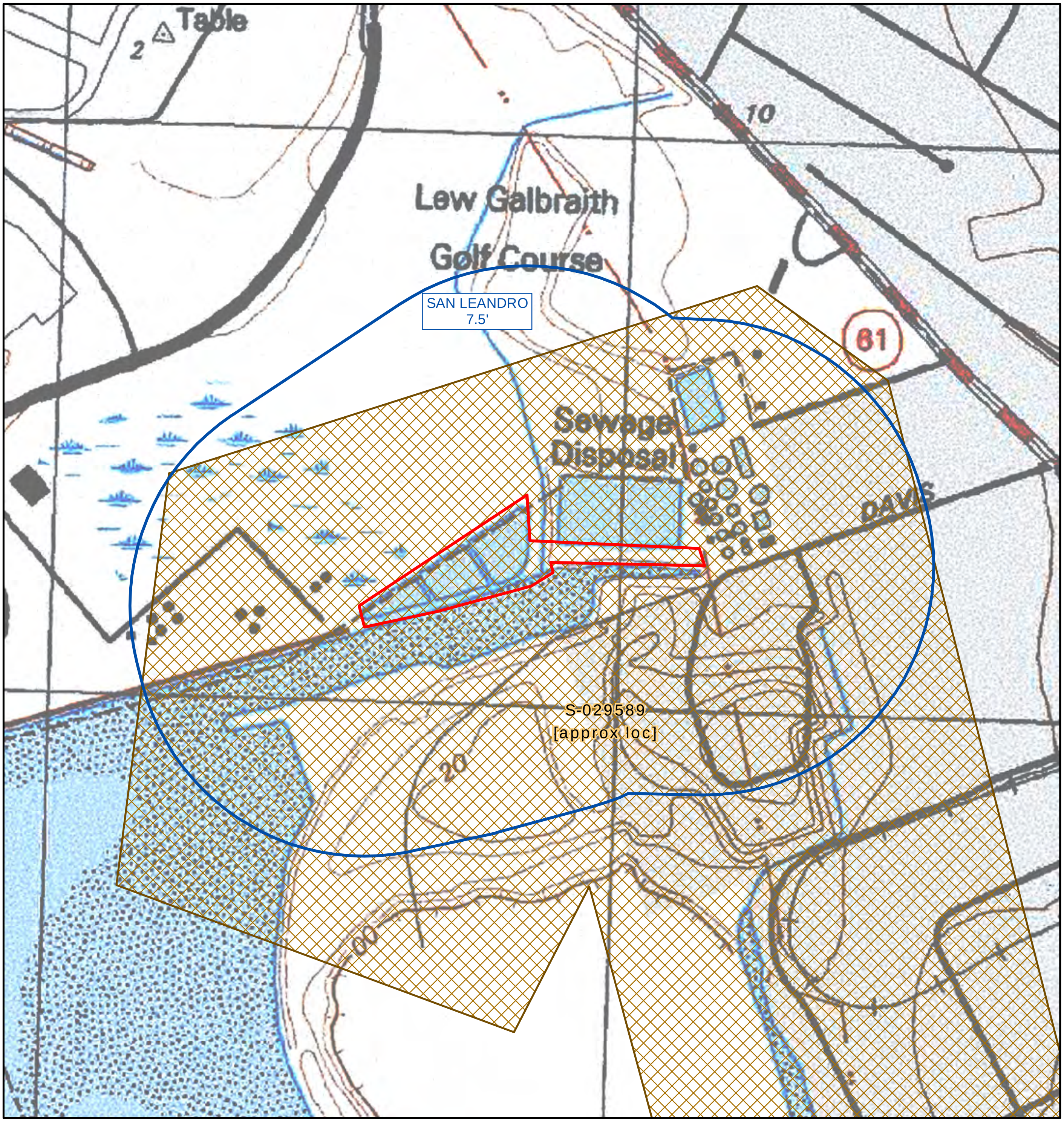
May depict confidential cultural resource locations.
Do not distribute.

Feet: 0, 290, 580, 870, 1,160
Meters: 0, 50, 100, 150, 200, 250

N

Project Area
One-Quarter Mile Radius
Quad outlines
Reports (polygons)

Report Map No. 2
San Leandro Treatment Wetland Project



Northwest Information Center

File #20-0924 9 Dec 2020 J. Akmenkalns

May depict confidential cultural resource locations.
Do not distribute.

Feet: 0, 290, 580, 870, 1,160
Meters: 0, 50, 100, 150, 200, 250

N

Project Area | One-Quarter Mile Radius | Quad outlines
Reports approx loc

Report List

San Leandro Treatment Wetland Project

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-012439		1990	David Chavez	Cultural Resources Investigations for the Port of Oakland Phase I Dredging, Cultural Resources Evaluation	David Chavez & Associates	
S-029589		2004	Adam Marlow, Allen Estes, and James Allan	Archaeological Assessment of the Proposed San Leandro Recycled Water Master Plan, San Leandro, Alameda County, California.	William Self & Associates	
S-031316		2006	Lorna Billat	New Tower ("NT") Submission Packet, FCC Form 620, San Leandro Water Control Plant, BA-12476A	Earth Touch, Inc.	
S-050779		2018	Michael Lenzi, Dina Ryan, Montse Osterlye, and Barb Siskin	Cultural Resources Inventory Report For The San Leandro Water Pollution Control Plant Solar Project Alameda County, California	Garcia and Associates	

Report List

San Leandro Treatment Wetland Project

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-001786		1979	David Chavez	Cultural Resources Evaluation for the Oakland Airport Transit Connector EIS/EIR, Alameda County, California		
S-015786		1993	Suzanne Baker	Archaeological Survey of Portions of the Metropolitan Oakland International Airport 2002 Airport Development Program, Alameda County, California	Archaeological/Historical Consultants	
S-033293	OHP PRN - FTA000517A; Voided - 26292; Voided - 33290; Voided - 40602	2000		Archaeological Survey Report, BART Connector Project, Alameda County, California	William Self Associates	01-000098, 01-000099, 01-000233, 01-001332, 01-010849, 01-010850, 01-010851, 01-010852, 01-010853, 01-010854, 01-010855, 01-010856, 01-010866, 01-010867, 01-011404, 01-012024
S-033293a		2000		Archaeological Survey Report, Bart OAC Project, Alameda County, California	William Self Associates, Inc.	
S-033293b		2000	Stephen Wee, Christopher McMorris, and B. Joseph De Lallo	Historic Architectural Survey Report, BART - Oakland Airport Connector, Oakland, Alameda County, California	JRP Historical Consulting Services	
S-033293c		2013	Barb Siskin and Julian Plath	Cultural Resources Monitoring Report for BART Oakland Airport Connector Project, Oakland, Alameda County, California (GANDA Project 600)	Garcia and Associates	
S-033293d		2012	Milford Wayne Donaldson	FTA000517A: BART Oakland Airport Connector Project, CA-03-0791	Office of Historic Preservation, Department of Parks and Recreation	
S-052020	Submitter - ESA / 181397	2018	Paul Zimmer	Alco Iron And Metal Expansion Project Alameda County, California; Cultural Resources Study	ESA	01-012125, 01-012126

Report List

San Leandro Treatment Wetland Project

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-000848	Agency Nbr - Contract AA550-CT6-	1976	David A. Fredrickson	A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources	The Anthropology Laboratory, Sonoma State College; Winzler & Kelly Consulting Engineers	
S-001784	Voided - S-3131	1979	David Chavez	Preliminary Cultural Resources Identification: San Francisco Bay Study for Corps of Engineers Projects		01-000033, 01-000034, 01-000079, 01-000081, 01-000082, 01-000083, 01-000084, 01-000086, 01-000087, 01-000088, 01-000089, 01-000090, 01-000097, 01-000100, 01-000101, 01-000104, 01-000105, 01-000109, 01-000110, 01-000112, 01-000113, 01-000115, 01-010839, 07-000046, 38-001318, 41-000006, 41-000044, 41-000080, 41-000095, 41-000109, 41-000124, 41-000125, 43-000021, 48-000025, 48-000030, 48-000042, 48-000079, 48-000081, 48-000082, 48-000083, 48-000084, 48-000090, 48-000181

Report List

San Leandro Treatment Wetland Project

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-002458		1981	Neil Ramiller, Suzanne Ramiller, Roger Werner, and Suzanne Stewart	Overview of Prehistoric Archaeology for the Northwest Region, California Archaeological Sites Survey: Del Norte, Humboldt, Mendocino, Lake, Sonoma, Napa, Marin, Contra Costa, Alameda	Northwest Regional Office, California Archaeological Sites Survey, Anthropological Studies Center, Sonoma State University	01-000080, 01-000084, 01-000086, 01-000104, 01-000119, 01-000124, 01-000125, 01-000126, 01-000127, 01-000137, 01-000139, 01-002053, 01-002104, 07-000047, 07-000079, 07-000080, 07-000081, 07-000082, 07-000083, 07-000092, 07-000093, 07-000105, 07-000131, 07-000146, 07-000147, 07-000148, 07-000149, 07-000150, 07-000151, 07-000168, 07-000173, 07-000175, 07-000177, 07-000185, 07-000186, 07-000190, 07-000323, 07-000440, 07-000447, 07-000448, 07-000449, 07-000462, 07-000470, 07-000474, 07-000476, 07-000481, 07-000674, 07-000710, 07-000724, 07-004621, 08-000015, 08-000018, 08-000021, 08-000090, 12-000125, 12-000175, 12-000186, 12-000194, 12-000199, 12-000202, 12-000207, 12-000209, 12-000210, 12-000211, 12-000263, 12-000264, 12-000266, 12-000336, 12-000442, 12-000445, 12-000458, 12-000824, 17-000006, 17-000026, 17-000035, 17-000072, 17-000114, 17-000177, 17-000286, 17-000287, 17-000289, 17-000290, 17-000307, 17-000320, 17-000392, 17-000407, 17-000437, 17-000446, 17-000470, 17-000531, 17-000535, 17-000546, 17-000550, 17-000551, 17-000554, 17-000572, 17-000610, 17-000639, 17-000640, 17-000673, 17-000787, 17-000812, 21-000017, 21-000034, 21-000039, 21-000051, 21-000053, 21-000057, 21-000058, 21-000106, 21-000143, 21-000163, 21-000177, 21-000217, 21-000221, 21-000235, 21-000242, 21-000245, 21-000252, 21-000262, 21-000283, 21-000290, 21-000291, 21-000295, 21-000332, 21-000335, 21-000342, 21-000346, 21-000347, 21-000368, 21-000369, 21-000370, 21-000651, 21-000653, 21-002539, 23-000143, 23-000387, 23-000450, 23-

Report List

San Leandro Treatment Wetland Project

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						000475, 23-000478, 23-000492, 23-000534, 23-000535, 23-000536, 23-000537, 23-000539, 23-000590, 23-000786, 23-000789, 23-000790, 23-000791, 23-000792, 23-000793, 23-000796, 23-000835, 23-001034, 23-001060, 23-001063, 23-001520, 23-002898, 23-002915, 23-002936, 23-002945, 28-000015, 28-000027, 28-000028, 28-000029, 28-000032, 28-000045, 28-000061, 28-000063, 28-000066, 28-000077, 28-000088, 28-000092, 28-000093, 28-000097, 28-000123, 28-000125, 28-000150, 28-000199, 28-000209, 28-000218, 28-000222, 28-000310, 28-000311, 28-000329, 28-000330, 28-000362, 28-000418, 28-000419, 28-000420, 28-000421, 28-000422, 28-000428, 28-000828, 28-000912, 49-000073, 49-000079, 49-000112, 49-000135, 49-000194, 49-000228, 49-000264, 49-000265, 49-000271, 49-000291, 49-000292, 49-000295, 49-000318, 49-000329, 49-000330, 49-000340, 49-000342, 49-000360, 49-000362, 49-000363, 49-000369, 49-000371, 49-000423, 49-000424, 49-000434, 49-000483, 49-000512, 49-000521, 49-000548, 49-000620, 49-000653, 49-000671, 49-000682, 49-000683, 49-000730, 49-000731, 49-000732, 49-000733, 49-000846, 49-000860, 49-000887, 49-000913, 49-000914, 49-000915, 49-000916, 49-000917, 49-000959, 49-000970, 49-000976, 49-000978, 49-000981, 49-000982, 49-000983, 49-000990, 49-000992, 49-001081, 49-001082, 49-001083, 49-001084, 49-001085, 49-001086, 49-001087, 49-001109, 49-001121
S-002458a		1982	Suzanne Ramiller	Prehistoric Archaeology Overview Northwest Region; California Archaeological Inventory, Volume I: Humboldt and Del Norte Counties	Anthropological Studies Center, Sonoma State University	

Report List

San Leandro Treatment Wetland Project

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-002458b		1982	Roger H. Werner	Archaeological Overview of Mendocino and Lake Counties	Anthropological Studies Center, Sonoma State University	
S-002458c		1982	Suzanne Stewart	Prehistoric Archaeology Overview Northwest Region; California Archaeological Inventory, Volume 3: Napa and Sonoma Counties	Anthropological Studies Center, Sonoma State University	
S-002458d		1982	Suzanne B. Stewart	Archaeological Overview of Alameda, Contra Costa, and Marin Counties	Anthropological Studies Center, Sonoma State University	
S-002458e		1982	Neil Ramiller	Environmental Overview of the Northwest Region	Anthropological Studies Center, Sonoma State University	
S-007903	Other - P.O. 951 1143 EA	1985	David Chavez	Cultural Resources Evaluation for the East Bay Municipal Utility District Infiltration/Inflow Project (P. O. 951 1143 EA)	David Chavez & Associates	01-000026, 01-000029, 01-000031, 01-000035, 01-000036, 01-000038, 01-000039, 01-000042, 01-000043, 01-000069, 01-000072, 01-000074, 01-000081, 01-000082, 01-000083, 01-000084, 01-000086, 01-000087, 01-000088, 01-000089, 01-000090, 01-000091, 01-000092, 01-000093, 01-000094, 01-000095, 01-000096, 01-000097, 01-000098, 01-000099, 01-000120, 01-000233, 01-010839, 07-000046, 07-000069, 07-000094, 07-000096, 07-000180
S-009462		1977	Teresa Ann Miller	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties	San Francisco State University	07-000323, 21-000087, 21-000376, 21-000378, 21-000379, 21-000380, 21-000381, 21-000382, 21-000383, 21-000384, 21-000386, 21-000387, 21-000388, 21-000389, 21-000390, 21-000391, 21-000392, 21-000393, 21-000394, 21-000395, 21-000396, 21-000397, 21-000398, 21-000399, 21-000400, 21-000401, 21-000402, 21-000546, 23-000434, 23-000789, 23-000790, 49-000629, 49-000785, 49-000787
S-009583		1978	David W. Mayfield	Ecology of the Pre-Spanish San Francisco Bay Area	San Francisco State University	

Report List

San Leandro Treatment Wetland Project

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-009795		1986	Thomas Lynn Jackson	Late Prehistoric Obsidian Exchange in Central California	Stanford University	06-000025, 07-000047, 07-000080, 07-000188, 07-000440, 17-000320, 17-000601, 21-000163, 21-000218, 21-000235, 21-000242, 21-000283, 21-000290, 21-000368, 21-000423, 21-000628, 23-001589, 23-001659, 23-003068, 23-003119, 28-000015, 28-000068, 28-000116, 28-000199, 28-000205, 28-000828, 49-000135, 49-000360, 49-000423, 49-000424, 49-000518, 49-000521, 49-000533, 49-000536, 49-000558, 49-000801, 57-000114
S-014621		1992	David Chavez	Archaeological Resources Review for the Oakland Enterprise Zone EIR, Alameda County, California	David Chavez and Associates	01-000026, 01-000031, 01-000038, 01-000040, 01-000042, 01-000072, 01-000091, 01-000092, 01-000098, 01-000099, 01-000233, 01-000241
S-015529		1993	Robert L. Gearhart II, Clell L. Bond, Steven D. Hoyt, James H. Cleland, James Anderson, Pandora Snethcamp, Gary Wesson, Jack Neville, Kim Marcus, Andrew York, and Jerry Wilson	California, Oregon, and Washington: Archaeological Resource Study	Espey, Huston & Associates, Inc.; Dames & Moore	01-000033, 01-000034, 01-000084, 01-000086, 01-000104, 07-000133, 07-000173, 07-000175, 07-000177, 17-000072, 17-000392, 21-000048, 21-001915, 23-001704, 27-000100, 27-000236, 27-000335, 27-000356, 27-000386, 27-000485, 38-000028, 38-000072, 38-000085, 38-000098, 41-000080, 41-000265, 44-000179
S-016660		1992	Jeffrey B. Fentress	Prehistoric Rock Art of Alameda and Contra Costa Counties, California	California State University, Hayward	01-000035, 01-000039, 01-000071, 01-000080, 01-000128, 01-000137, 01-000138, 01-000144, 01-000195, 01-000198, 01-000199, 01-002112, 07-000029, 07-000094, 07-000189, 07-000193, 07-000212, 07-000216, 07-000219, 07-000230, 07-000242, 07-000255, 07-000260, 07-000271, 07-000301, 07-000302, 07-000323, 07-000344, 07-000345, 07-000346, 07-000347, 07-000348, 07-000356, 07-000362, 07-000374, 07-000725, 07-000726, 07-000727, 07-000730, 07-000734, 07-000736, 07-000738, 07-000739

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-017773	Submitter - Contract #04E634-EP; Submitter - Task Order #9	1992	Angela M. Banet	Contract 04E634-EP, Task Order #9, Historic Map Review for CALTRANS Maintenance Facilities (letter report)	Basin Research Associates, Inc.	
S-017835		1975	Judy Myers Suchey	Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium	University of California, Riverside	01-000086, 01-000104, 01-000105, 06-000025, 07-000080, 07-000081, 07-000083, 07-000087, 21-000017, 21-000193, 21-000242, 21-000252, 48-000010, 57-000145
S-018217		1996	Glenn Gmoser	Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report	California Department of Transportation	01-000014, 01-000023, 01-000227, 07-000108, 07-000119, 38-000002, 38-000004, 41-000273, 43-000106, 43-000297, 43-000624, 43-001078, 44-000010, 44-000201, 44-000300, 49-000195
S-020395		1998	Donna L. Gillette	PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying?	California State University, Hayward	07-000094, 07-000323, 12-000050, 17-000071, 17-001315, 21-000087, 21-000376, 21-000378, 21-000379, 21-000381, 21-000382, 21-000383, 21-000384, 21-000386, 21-000387, 21-000388, 21-000389, 21-000390, 21-000391, 21-000392, 21-000393, 21-000394, 21-000395, 21-000396, 21-000397, 21-000398, 21-000399, 21-000400, 21-000401, 21-000402, 21-000419, 21-000433, 21-000546, 21-000620, 21-000621, 21-000624, 21-000661, 23-000434, 23-000809, 23-000810, 23-001698, 23-001725, 23-001792, 23-001798, 23-001799, 23-001803, 23-001804, 23-001930, 23-001942, 23-001950, 23-001963, 35-000013, 43-000067, 43-000080, 43-000287, 43-000289, 43-000504, 49-000046, 49-000240, 49-000533, 49-000550, 49-000629, 49-000785, 49-000787, 49-000868, 49-000960, 49-000975, 49-001004, 49-001087, 49-001239, 49-002121
S-030204		2003	Donna L. Gillette	The Distribution and Antiquity of the California Pecked Curvilinear Nucleated (PCN) Rock Art Tradition.	University of California, Berkeley	01-002148, 21-000384, 23-000810

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-032596	Caltrans - EA No. 447600; Other - Contract #04A2098	2006	Randall Milliken, Jerome King, and Patricia Mikkelsen	The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways	Consulting in the Past; Far Western Anthropological Research Group, Inc.	
S-033239		1994	David Chavez	Alameda Watershed, Natural and Cultural Resources: San Francisco Watershed Management Plan	Environmental Science Associates	01-010841
S-033600	Agency Nbr - Contract No. 04A2098; Caltrans - EA No.	2007	Jack Meyer and Jeff Rosenthal	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4	Far Western Anthropological Research Group, Inc.	01-000001, 01-000002, 01-000014, 01-000063, 01-000064, 01-000067, 01-000080, 01-000124, 01-000139, 01-000140, 01-001795, 01-002110, 01-002160, 01-002162, 01-002245, 07-000019, 07-000024, 07-000037, 07-000047, 07-000075, 07-000079, 07-000088, 07-000089, 07-000108, 07-000182, 07-000185, 07-000186, 07-000217, 07-000239, 07-000401, 07-000721, 21-000010, 21-000048, 21-002615, 28-000009, 28-000028, 28-000301, 28-000967, 38-000006, 38-000028, 38-000101, 38-000102, 38-000119, 41-000080, 41-000284, 43-000016, 43-000189, 43-000296, 43-000308, 43-000310, 43-000423, 43-000424, 43-000448, 43-000451, 43-000485, 43-000561, 43-000604, 43-000608, 43-000614, 43-000623, 43-001015, 43-001058, 43-001080, 43-001163, 43-001194, 43-001576, 48-000007, 48-000157
S-048927		1997	Donald Scott Crull	The Economy and Archaeology of European-made Glass Beads and Manufactured Goods Used in First Contact Situations in Oregon, California and Washington	University of Sheffield, England	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-049780	OTIS Report Number - FHWA_2016_0615_001	2017	Brian F. Byrd, Adrian R. Whitaker, Patricia J. Mikkelsen, and Jeffrey S. Rosenthal	San Francisco Bay-Delta Regional Context and Research Design for Native American Archaeological Resources, Caltrans District 4	California Department of Transportation, District 4	01-000001, 01-000002, 01-000014, 01-000015, 01-000022, 01-000033, 01-000034, 01-000038, 01-000062, 01-000066, 01-000080, 01-000084, 01-000086, 01-000087, 01-000089, 01-000104, 01-000105, 01-000106, 01-000107, 01-000116, 01-000117, 01-000139, 01-000152, 01-000175, 01-000197, 01-000201, 01-000202, 01-000234, 01-000237, 01-001795, 01-002120, 01-002160, 01-002162, 01-002245, 01-002280, 01-010509, 01-010610, 01-011556, 07-000019, 07-000021, 07-000029, 07-000033, 07-000037, 07-000047, 07-000066, 07-000070, 07-000079, 07-000080, 07-000089, 07-000093, 07-000098, 07-000105, 07-000117, 07-000118, 07-000147, 07-000148, 07-000149, 07-000150, 07-000154, 07-000168, 07-000173, 07-000174, 07-000175, 07-000176, 07-000185, 07-000186, 07-000189, 07-000197, 07-000217, 07-000227, 07-000230, 07-000238, 07-000239, 07-000242, 07-000309, 07-000359, 07-000365, 07-000366, 07-000400, 07-000401, 07-000440, 07-000441, 07-000459, 07-000461, 07-000462, 07-000721, 07-000724, 07-000790, 07-000792, 07-002570, 07-002592, 07-002650, 07-004537, 21-000002, 21-000036, 21-000043, 21-000045, 21-000048, 21-000051, 21-000057, 21-000058, 21-000066, 21-000070, 21-000072, 21-000073, 21-000074, 21-000075, 21-000097, 21-000106, 21-000109, 21-000142, 21-000143, 21-000152, 21-000163, 21-000164, 21-000165, 21-000166, 21-000167, 21-000175, 21-000177, 21-000193, 21-000195, 21-000196, 21-000199, 21-000200, 21-000217, 21-000218, 21-000219, 21-000220, 21-000221, 21-000222, 21-000256, 21-000295, 21-000305, 21-000306, 21-000327, 21-000332, 21-000337, 21-

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						000346, 21-000369, 21-000423, 21-000459, 21-000462, 21-000528, 21-000541, 21-000544, 21-000552, 21-000664, 21-000675, 21-002625, 27-000613, 28-000028, 28-000029, 28-000175, 28-000176, 28-000667, 28-000874, 38-000004, 38-000006, 38-000007, 38-000017, 38-000021, 38-000022, 38-000026, 38-000028, 38-000029, 38-000030, 38-000031, 38-000101, 38-000102, 38-000119, 38-000162, 38-000172, 38-004265, 38-004318, 38-004319, 38-004326, 38-004329, 38-004352, 38-004638, 38-004882, 38-005131, 38-005503, 41-000001, 41-000009, 41-000011, 41-000027, 41-000028, 41-000037, 41-000044, 41-000075, 41-000080, 41-000081, 41-000086, 41-000087, 41-000103, 41-000117, 41-000127, 41-000136, 41-000141, 41-000142, 41-000149, 41-000152, 41-000160, 41-000204, 41-000244, 41-000252, 41-000259, 41-000263, 41-000265, 41-000284, 41-000308, 41-000315, 41-002076, 43-000016, 43-000019, 43-000021, 43-000024, 43-000026, 43-000027, 43-000032, 43-000050, 43-000057, 43-000082, 43-000085, 43-000087, 43-000137, 43-000141, 43-000167, 43-000277, 43-000285, 43-000295, 43-000302, 43-000308, 43-000310, 43-000321, 43-000324, 43-000334, 43-000349, 43-000360, 43-000423, 43-000465, 43-000479, 43-000485, 43-000549, 43-000576, 43-000578, 43-000579, 43-000581, 43-000586, 43-000587, 43-000588, 43-000595, 43-000604, 43-000608, 43-000614, 43-000618, 43-000624, 43-000662, 43-000989, 43-000990, 43-001058, 43-001060, 43-001071, 43-001163, 43-001164, 43-001172, 43-001194, 43-001279, 43-001531, 43-001594, 43-001768, 43-001838, 43-001871, 43-002704, 43-003005, 48-

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						000007, 48-000019, 48-000033, 48-000075, 48-000083, 48-000150, 48-000175, 48-000176, 48-000188, 48-000898, 49-000199, 49-001011, 49-001862
S-049780a		2016	Julianne Polanco	FHWA_2016_0615_001, Caltrans District 4 Archaeological Context	Office of Historic	
S-052028		1989	Paul H. Sorenson	Fill and Development of the Oakland Airport 1927 to 1989		

ATTACHMENT D

NATIVE AMERICAN CONSULTATION

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

November 18, 2020

Andrew Pulcheon, AICP, CEP, Principal
LSA Associates

Via Email to: andrew.pulcheon@lsa.net

Re: San Leandro Treatment Wetland Project, Alameda County

Dear Mr. Pulcheon:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

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

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Alameda County
11/18/2020

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA, 94062
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com
Costanoan

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
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Pomona, CA, 91766
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Fax: (909) 524-8041
rumsen@aol.com
Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org
Costanoan

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com
Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano,
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org
Costanoan

North Valley Yokuts Tribe
Katherine Perez, Chairperson
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Linden, CA, 95236
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Costanoan
Northern Valley Yokut

North Valley Yokuts Tribe
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Phone: (209) 662 - 2788
huskanam@gmail.com
Costanoan
Northern Valley Yokut

The Ohlone Indian Tribe
Andrew Galvan,
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Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com
Bay Miwok
Ohlone
Patwin
Plains Miwok

The Confederated Villages of Lisjan
Corrina Gould, Chairperson
10926 Edes Avenue
Oakland, CA, 94603
Phone: (510) 575 - 8408
cvltribe@gmail.com
Bay Miwok
Ohlone
Delta Yokut

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed San Leandro Treatment Wetland Project, Alameda County.

APPENDIX G: RISK ANALYSIS FOR REUSE OF STOCKPILE MATERIAL

terraphase engineering

Technical Memorandum

To: Nick Thom
City Engineer
City of San Leandro
3000 Davis Street
San Leandro, California 94577

From: Kevin Long, Principal
Linda Logan, Senior Associate
Peter Zawislanski, Sr. Principal
Lucas Paz, Principal
Terraphase Engineering Inc.

cc: Hayes Morehouse
Water Pollution Control Plant Manager
City of San Leandro
3000 Davis Street
San Leandro, California 94577

Date: January 31, 2024

Project No.: 0364.003.001

Subject: **Risk-Based Evaluation for Reuse of Stockpile Material for the Proposed Treatment Wetland Project – City of San Leandro Water Pollution Control Plant**

On behalf of the City of San Leandro, Terraphase Engineering Inc. (Terraphase) has prepared this Technical Memorandum to present a risk-based evaluation of the reuse of stockpiled material for the proposed treatment wetland project (the Project) at the City of San Leandro Water Pollution Control Plant (WPCP). The goal of the Project is to add stockpiled soil to the existing wet-weather storage basin (former polishing pond) used by the WPCP to convert it into a wastewater treatment wetland for pollution reduction, habitat enhancement, and shoreline resiliency (LSA 2020a). This memorandum incudes a description of the site setting, an overview of the proposed project, a summary of the sampling performed to support the evaluation, and an evaluation of the potential for risks to human health and ecological receptors following construction of the proposed wastewater treatment wetland.

As presented in this memorandum, the concentrations of chemicals of potential concern (COPCs) in both stockpiled soil and sludge from the storage pond, do not represent conditions that pose an unacceptable risk to human health or the environment.

Site Setting

The WPCP is located at 3000 Davis Street, San Leandro, Alameda County, California. The former polishing pond basin is located at the western end of the WPCP and is bordered on the south and east by a tidal slough with a connection to San Francisco Bay (the Bay), and on the north by the Oakland International Airport and the Metropolitan Golf Links course. The 194-acre Oyster Bay Regional Shoreline Area is located immediately south of the tidal slough. The storage basin resembles an active salt pond with little to no vegetation except for weedy plants along its banks that are typical of heavily disturbed sites along the Bay (LSA 2020b).

Proposed Project

The general proposed Project design is to add (or mix) stockpiled soil to the existing sludge in the storage basin, cover the soil/sludge with clean fill, and place an impermeable liner on top of the clean fill, which will become the bottom of the treatment wetland. As an additional measure, stabilization of the soil/sludge with cement to provide a stable construction foundation is also being considered. The goal of the treatment wetland is to reduce nitrogen (nitrate) and micro-organic constituents in the wastewater treatment plant effluent prior to discharge to the Bay. Upstream of the wetland will be an engineered membrane-aerated bioreactor designed to support nitrification of the ammonia in the wastewater plant effluent to nitrate. This water will then be conveyed through a hydraulic distribution system around the perimeter of the wetland basin. The open-water wetland and terraced bioreactors buried in the side slopes (filled with woodchips) will provide the carbon source to support de-nitrification (conversion of nitrate to nitrogen gas) prior to discharge. The impermeable liner is expected to develop an algal mat to help support de-nitrification. The water depth of the treatment wetland will be maintained at a relatively shallow level (12-18 inches) and the treated water will be discharged through a one-way outlet pipe with a valve that will prevent any tidal water from entering the basin. The treatment wetland will only be planted with riparian/wet meadow vegetation on the side slopes and potentially along the base of the slopes. This vegetation will be mowed and maintained to minimize the development of habitat for birds (bird strikes are an issue at Oakland Airport, which is directly adjacent to the Project site). Open-water areas will not be planted with emergent vegetation and floating plants will be discouraged through routine maintenance to support denitrification and photolysis of micro-organic contaminants.

Historical Investigations

Terraphase conducted a review of historical data for the stockpiled soil, the storage basin sludge, and groundwater, collected by others in 2014 to assist the City in developing an approach for the management of soil and sludge at the WPCP. Terraphase screened the data against applicable San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) screening guidelines. The maximum detected concentrations for select metals in samples collected from stockpiled soil and sludge were greater than the recommended sediment chemistry screening guidelines for beneficial reuse of dredged material (Wetland Foundation Material Concentration Guidelines; SFBRWQCB 2000). This included lead, silver, and zinc in the stockpiled soil and cadmium, copper, lead, mercury, nickel, silver and zinc in the sludge. Only four sludge samples had been previously collected for chemical analysis and all four samples were from the west end of the sludge pond. Therefore, because this information was insufficient to adequately characterize the nature and extent of COPC in sludge, Terraphase performed additional sludge sampling in other areas of the polishing pond for analysis.

Additional Sludge Sampling

In October of 2023, Terraphase collected 10 sludge samples from the central and eastern portions of the polishing pond. The samples were collected on a grid, with five samples each in the central portion and eastern portions of the polishing pond. No additional samples were collected from the western portion of the pond. The samples were collected using a plastic tube, which was lowered from the side of a raft. Depending on the substrate, approximately 6 and 12 inches of sludge was collected. Following sampler dewatering, each sludge sample was placed in a plastic tub, where it was manually homogenized using a stainless-steel trowel or similar tool. The samples were then placed in laboratory-provided jars. The jars were labeled and placed in a cooler for transport to the analytical laboratory, Enthalpy Analytical, under chain-of-custody procedures. Each of the samples was analyzed for:

- Title 22 Metals [United States Environmental Protection Agency (USEPA) Method 6010]
- Deionized-water-extracted (DI-WET) metals [USEPA Methods 1311 modified and 6010]
- Total petroleum hydrocarbons [USEPA Method 8015]
- Polychlorinated biphenyls (PCBs) [USEPA Method 8082]
- Organochlorine pesticides [USEPA Method 8081]
- Moisture content [ASTM D2216]

Tables A-1 (stockpiled soil) and A-2 (storage pond sludge), which are provided in Attachment A, present the sampling results for each media. Each table provides a sample-by-sample comparison to the following potentially relevant generic screening levels:

- Wetland Foundation Material Concentration Guidelines (SFBRWQCB 2000)
- Environmental Screening Levels (ESLs; SFBRWQCB 2019) for the following scenarios:
  - Soil Direct Exposure [Construction Worker]
  - Soil Leaching to Groundwater [Drinking Water]
  - Soil Leaching to Groundwater [Non-Drinking Water]
  - Aquatic Habitat Goal [Fresh Water Ecotox]
  - Aquatic Habitat Goal [Saltwater Ecotox]

The identification of chemical concentrations above these screening levels does not necessarily mean that unacceptable risk could exist. Rather, screening levels help identify sampling results that may warrant additional evaluation. They provide a means for reviewing datasets by segregating concentrations that indicate a higher potential for health significance from those that indicate a low potential. In this case, they have been used to help understand the nature and extent of chemicals in stockpiled soil and sludge and determine which chemicals be considered site-related COPC.

Based upon this screening, the following chemicals were detected in one or more samples at concentrations greater than these generic screening levels and are considered to be COPC in this risk evaluation.

Table: Chemicals of Potential Concern

Group	Chemical	Stockpile Soil	Storage Pond Sludge
SVOCs	Acenaphthene	●	
	Benzo(a)anthracene	●	
	Benzo(a)pyrene	●	
	Benzo(b)fluoranthene	●	
	Chrysene	●	
	Dibenz(a,h)anthracene	●	
	Fluoranthene	●	
	Naphthalene	●	
	Phenanthrene	●	
	Pyrene	●	
	Chlordane (total)	●	
PCBs	PCBs (total)	●	
PEST	Dieldrin	●	
	Endrin	●	
	Heptachlor epoxide	●	
METALS	Arsenic	●	●
	Cadmium	●	●
	Chromium (total)	●	●
	Chromium VI	●	
	Copper	●	●
	Cyanide (total)	●	
	Lead	●	●
	Mercury	●	●
	Nickel	●	●
	Silver	●	●
	Zinc	●	●

Ecological Evaluation

The Project site, which includes the 4.3-acre basin and the adjacent upland areas, is vegetated with trees and shrubs along the levee and access road around the basin (LSA 2020b). Due to the disturbed nature of the site and the presence of non-native plant species, it does not provide habitat for special-status plants.

Birds such as the California towhee (*Melozone crissalis*) and northern mockingbird (*Mimus polyglottos*) have been observed on the Project site, as has the western fence lizard (*Sceloporus occidentalis*). Burrows and/or tracks observed on the Project site suggest the presence of small mammals, such as the California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), and raccoon (*Procyon lotor*).

Special-status species, such as the white-tailed kite (*Elanus leucurus*) and Alameda song sparrow (*Melospiza melodia pusillula*), have been observed on the site and other special-status species, e.g., California Ridgway's rail (*Rallus obsoletus obsoletus*), western snowy plover (*Charadrius alexandrines* *nivosus*), and the salt marsh wandering shrew (*Sorex vagrans haliocoetes*), are known to occur in the vicinity of the site but are unlikely to use it due to lack of suitable habitat (LSA 2020b). Several special-status fish species, such as longfin smelt (*Spirinchus thaleichthys*), North American green sturgeon (*Acipenser medirostris*), steelhead (*Oncorhynchus mykiss*), and chinook salmon (*O. tshawytscha*) inhabit the Bay and could briefly forage in the tidal slough during high tide; however, spawning, or rearing habitat is not present in the tidal slough for these fish species (LSA 2020b).

The salt-pond-like habitat of the current storage basin is unlikely to support a balanced aquatic life community and is not likely to be used by waterfowl for foraging.

As described above, the goal of the proposed treatment wetland is to provide a facility that reduces nitrate and micro-organic constituents in the WPCP effluent prior to discharge to the Bay. The impermeable liner fitted to the bottom and sides of the treatment wetland is expected to develop an algal mat to help support de-nitrification. Given the relatively shallow water depth of the proposed treatment wetland, this algal mat has the potential to provide a dietary source for zooplankton, such as copepods and rotifers, and/or the larvae of insects such as midges, mayflies, and dragonflies that typically inhabit surface sediments where they feed on algae and detrital matter. However, the clean fill placed on top of the stockpiled soil and sludge and the presence of the impermeable liner will prevent the potential for exposure of these aquatic organisms to metals in the buried soil and sludge. As a consequence, potential exposure pathways to the sludge/soil beneath the liner for birds feeding on emergent insects or waterfowl foraging in the treatment wetland, are considered incomplete.

Furthermore, while the side slopes of the treatment wetland will be vegetated, they will be mowed to minimize the development of habitat that could be used by birds for perching, cover, or nesting, to ensure the insignificance of this exposure pathway for these receptors.

Although there is evidence for the presence of small mammals at the Project site, the wetland environment is not the preferred habitat for these species. For example, the California ground squirrel prefers open grassland, oak woodlands, agricultural lands, and tends to avoid water (Smith et al. 2016). The pocket gopher typically occupies desert ranges with loose sandy soil for burrowing but can also be found in meadows and agricultural areas with cultivated soils. Distribution of this species is limited by hard soils and barriers, such as rivers and rock formations (Jones and Baxter 2004). Therefore, it is unlikely that these small mammals will be found burrowing or foraging close to the treatment wetland. Given the habitat preferences for these species, along with the placement of clean fill over the stockpiled soil/sludge and the impermeable liner, the potential exposure pathway for such small mammals to metals in the buried stockpiled soil and sludge is considered incomplete.

A potential exposure pathway that could result in risk to ecological receptors is leaching of metals to groundwater. A distilled water waste extraction test (DI-WET) has been performed on the stockpile-soil samples and the recently collected sludge samples. The standard WET uses a dilute acid as the leaching medium to represent leaching of solids from landfill leachate, while the DI-WET is designed to represent leaching under natural field conditions. The DI-WET results showed the leachability of metals in stockpiled soil and sludge is very low, with DI-WET-extracted concentrations below or slightly above SFBRWQCB ESLs for fresh-water and salt-water habitats (SFBRWQCB 2019). The following table summarizes the DI-WET soil and sludge data relative to Aquatic Habitat Goal ESLs. Only metals whose 95-percent upper confidence limit on the mean (UCLM) DI-WET concentration exceeded at least one of the ESLs are presented.

Table: Comparison of DI-WET Concentrations to Aquatic Life ESLs

Metal	Fresh Water (µg/L)	Saltwater (µg/L)	95% UCL on the Mean	
			Stockpile Soil (µg/L)	Storage Pond Sludge (µg/L)
Cadmium	0.25	9.3	1.0	NC*
Copper	9	3.1	23.9	5
Lead	2.5	8.1	7.8	5.45
Mercury	0.025	0.025	0.12	NC*
Nickel	52	8.2	2.8	15.8
Selenium	5	0.5	2.1	3.30
Silver	3.4	0.19	NC*	0.732
Vanadium	19	NE	51.1	7.25

Notes: NE = ESL not established, NC = UCLM not calculated because all results were non-detect.*

The UCLMs were generally above one ESL but not the other, except for copper and mercury in the stockpiled soil, which were above both the fresh water and saltwater habitat ESLs. However, all of the exceedances were fairly minor. Given that the sludge is underlain by Bay mud, which has a very low permeability and is likely to attenuate the movement of metals, and that the pond is in an area where hydraulic gradients are due to be upward (i.e., in or near a groundwater discharge zone), it is unlikely that dissolved metals would migrate to the underlying groundwater.

This is borne out by historical groundwater data. Groundwater samples were collected in 2016 from three wells screened in shallow groundwater immediately next to the storage basin (Fugro 2016). The three wells were located between the storage basin and the tidal slough. The concentrations of dissolved metals detected in the groundwater samples were all below the fresh-water and saltwater habitat ESLs.

The potential stabilization of the pond sludge is still in its planning stages; however, it is likely that Portland cement (PC) will be used to stabilize the sludge, and/or sludge-soil mixture, to facilitate the construction of the Project. Mixing of PC with the sludge/soil will result in more alkaline conditions. However, the impact of higher pH on the chemical composition of any potential leachate is considered to be minimal because the leachability of most metals is expected to decrease as a result of PC stabilization.[1] An alkaline pH can potentially increase the solubility of arsenic, but the overall arsenic *leachability* is expected to decrease due to PC stabilization. Furthermore, leaching of COPCs from stabilized soil/sludge is highly unlikely given its placement below clean fill and the impermeable liner over the clean fill.

[1] Solidification/stabilization are well-established technologies for reducing the leaching of contaminants, including metals, from soil and sediment (https://clu-in.org/techfocus/default2.focus/sec/Solidification-Stabilization/cat/Overview/)

Therefore, metals in the untreated stockpile soil and sludge are unlikely to leach to groundwater, and by extension, also unlikely to reach the tidal slough, and the potential exposure pathway for special-status fish (and other marine life) in the tidal slough is therefore considered incomplete.

Human Health Evaluation

Based upon reasonably anticipated future use of the Project site, there will be no complete human exposure pathways to COPCs in stockpiled soil and storage pond sludge following the construction of the proposed treatment wetland. The stockpiled soil and sludge will be covered by clean fill, an impermeable liner, and 12-18 inches of water. Workers could be exposed to COPCs in the stockpiled soil and sludge during construction. Potential routes of exposure to COPCs in stockpiled soil and sludge would include incidental ingestion and dermal contact. Potential routes of exposure to COPCs in stockpiled soil would also include inhalation of volatiles and airborne particulates.

Cumulative cancer risk and noncancer HI for construction workers assumed to be exposed to COPC concentrations in stockpiled soil or sludge over the course of a 6-month construction project were calculated. Separate risk estimates were calculated for stockpiled soil and sludge using exposure concentrations calculated for each media. The exposure concentrations for each COPC were equal to maximum detected concentrations in each media, with the exception of benzo(a)pyrene, PCBs (total) and arsenic in stockpiled soil. The exposure concentrations for these three COPC in stockpiled soil were based upon UCLM[2] because they were identified as chemicals that would contribute most to cumulative risk/HI. This approach (i.e., refining the exposure concentrations for only the chemicals contributing most to the cumulative risk) is efficient in that it avoids calculations that would not materially affect the cumulative cancer risk and/or HI estimates. This approach is also conservative, because it uses the maximum detected concentrations, rather than UCLM, for many chemicals.

Table: Refined Exposure Concentrations – UCLM (Stockpiled Soil)

Chem Group	Chemical	Max Detect (mg/kg)	95% UCLM (mg/kg)
SVOCs	Benzo(a)pyrene	2.8	0.23
PCBs	PCBs (total)	6.7	0.68
METALs	Arsenic	20	7.1

Attachment B provides the input and output tables from ProUCL.

The risk and HI estimates[3] use high-end exposure factors recommended by CalEPA Department of Toxic Substances Control (DTSC 2019a) and USEPA (1991, 2011, 2014) for estimating reasonable RME (where

[2] The UCLM calculations were performed using ProUCL (Version 5.2), including the Kaplan-Meier method for datasets with non-detects.

[3] These risk and HI estimates conservatively assume that the measured concentrations of all COPC are entirely site-related (e.g., metals concentrations are not associated naturally occurring levels).

available and appropriate) and COPC-specific toxicity values (CalEPA DTSC 2019b)[4]. The cumulative cancer risk and noncancer HI were compared to the risk management goals of $1x10^{-6}$ and 1, respectively. These risk management goals are used by CalEPA DTSC (2015, 2022a) and the California Office of Environmental Health Hazard Assessment (OEHHA 2020) for determining whether risk management action is warranted.

Tables 1a and 1b present the cumulative cancer risk and noncancer HI calculations, respectively, for construction worker exposure to COPC in stockpiled soil. Tables 2a and 2b present the cumulative cancer risk and noncancer HI calculations, respectively, for construction worker exposure to COPC in sludge. As shown, the conservatively estimated cumulative cancer risk and noncancer HI for construction worker exposure to COPC in both media are less than or equal to the risk management goals. As a result, construction worker exposure to COPC in these media during the construction of the proposed treatment wetland does not pose an unacceptable risk to human health.

Table: Cumulative Cancer Risk and Noncancer HI for Construction Worker Exposure to COPC

Exposure Media	Cumulative Cancer Risk	Noncancer HI
Stockpiled Soil	$1x10^{-6}$	0.5
Storage Pond Sludge	$7x10^{-7}$	0.3

Potential exposure of construction workers to lead in stockpiled soil and sludge is evaluated separately from the assessment for other COPCs because CalEPA DTSC (2022b) evaluates the significance of lead exposures using blood lead level as an index of exposure, rather than in terms of cancer risk or noncancer HQ. CalEPA DTSC uses a soil screening level of 500 mg/kg to evaluate the potential significance of occupational exposures to lead in industrial/commercial settings (CalEPA DTSC 2022b). Exposure concentrations were calculated by estimating the UCLM lead concentrations in both media, considering construction worker exposure to lead in the stockpiled soil and sludge during construction of the treatment wetland. Because the Project may involve exposure to both media, an additional exposure concentration for lead was calculated for the combined dataset.

Table: Refined Exposure Concentrations - UCLM (Lead)

Exposure Media	Chemical	Max Detect (mg/kg)	95% UCLM (mg/kg)
Stockpiled Soil	Lead	3,100	420
Storage Pond Sludge	Lead	1,600	670
Stockpiled Soil + Sludge	Lead	3,100	440

These exposure concentrations were compared to CalEPA DTSC's soil screening level of 500 mg/kg. For soil, the lead exposure concentration is less than this screening level indicating that construction worker

[4] Consistent with CalEPA DTSC Regulation "Toxicity Criteria for Human Health Risk Assessment" (effective September 4, 2018) and USEPA's hierarchy of sources (USEPA 2003).

exposure to lead in the stockpiled soil, alone, during construction of the treatment wetland would not result in blood lead concentrations that would exceed CalEPA DTSC's risk management goal. The exposure concentration for sludge is slightly higher than this screening level indicating that construction worker exposure to lead in sludge, alone, during construction may result in blood lead concentrations that could exceed CalEPA DTSC's risk management goal.

The exposure duration of the Project is assumed to be approximately 6 months. This corresponds to an exposure frequency of 125 days. As noted by USEPA (2016), a constant lead intake rate over a duration of 90 days is needed to achieve a blood lead concentration that is sufficiently close to steady-state. Infrequent and non-continuous exposures to lead would not be expected to result in adequate exposure to attain blood lead concentrations that would be of concern. Given the specifics of this Project, it is reasonable to assume that only about half of a construction worker's exposure will be to sludge (e.g., ~60 days of exposure). As a result, while the lead exposure concentration in sludge is greater than CalEPA DTSC's screening level of 500 mg/kg, the exposure of a construction worker to this specific-media would not be of a long-enough duration to result in a blood lead concentration that would be of concern. Further, the exposure concentration estimated assuming exposure to lead in both stockpiled soil and sludge (combined) is 440 mg/kg. This concentration is less than the screening level of 500 mg/kg.

Overall, these results demonstrate that lead concentrations in stockpiled soil and sludge will not pose an unacceptable lead exposure to workers supporting the construction of the Project.

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Attachments (6):

- Table 1a – Cancer Risk Calculations for Construction Worker Exposure to Soil
- Table 1b – Noncancer Hazard Index Calculations for Construction Worker Exposure to Soil
- Table 2a – Cancer Risk Calculations for Construction Worker Exposure to Sludge
- Table 2b – Noncancer Hazard Index Calculations for Construction Worker Exposure to Sludge
- Attachment A – Data Tables
  - Table A-1 – Soil Sampling Analytical Results
  - Table A-2 – Sludge Sampling Analytical Results
- Attachment B – Upper Confidence Limit Calculations – ProUCL Input and Output

Tables

Table 1a:

Cancer Risk Calculations for Exposure of Construction Worker to Soil

Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes
Chem Group	Chemical	CASRN	C_{soil} (mg/kg)	RBA	LADD (mg/kg/d)	SF_{oral} $(mg/kg/d)^{-1}$	Risk	ABS_{derm}	LADD (mg/kg/d)	SF_{derm} $(mg/kg/d)^{-1}$	Risk	C_{air} (mg/m^3)	URF (m^3/mg)	Risk	C_{air} (mg/m^3)	URF $(mg/m^3)^{-1}$	Risk	Risk
SVOC	Acenaphthene	83-32-9	5.8E-01		7.1E-09			1.3E-01	1.3E-08			3.8E-05			1.2E-08			
SVOC	Benzo(a)anthracene	56-55-3	7.0E+00		8.6E-08	1.0E-01	8.6E-09	1.3E-01	1.6E-07	1.0E-01	1.6E-08	1.0E-05	1.1E-01	1.8E-09	1.4E-07	1.1E-01	2.5E-11	2.6E-08
SVOC	Benzo(a)pyrene	50-32-8	2.3E-01		2.8E-09	1.0E+00	2.8E-09	1.3E-01	5.2E-09	1.0E+00	5.2E-09	1.2E-07	1.1E+00	2.1E-10	4.6E-09	1.1E+00	8.3E-12	8.2E-09
SVOC	Benzo(b)fluoranthene	205-99-2	9.8E+00		1.2E-07	1.0E-01	1.2E-08	1.3E-01	2.2E-07	1.0E-01	2.2E-08	3.0E-05	1.1E-01	5.4E-09	2.0E-07	1.1E-01	3.5E-11	3.9E-08
SVOC	Chrysene	218-01-9	8.6E+00		1.0E-07	1.0E-03	1.0E-10	1.3E-01	1.9E-07	1.0E-03	1.9E-10	4.5E-05	1.1E-03	8.0E-11	1.7E-07	1.1E-03	3.1E-13	3.8E-10
SVOC	Dibenz(a,h)anthracene	53-70-3	7.6E-01		9.3E-09	1.0E+00	9.3E-09	1.3E-01	1.7E-08	1.0E+00	1.7E-08	5.6E-08	1.1E+00	1.0E-10	1.5E-08	1.1E+00	2.7E-11	2.7E-08
SVOC	Fluoranthene	206-44-0	8.1E+00		1.0E-07			1.3E-01	1.8E-07			3.8E-05			1.6E-07			
SVOC	Naphthalene	91-20-3	1.1E+00		1.3E-08	1.2E-01	1.6E-09	1.3E-01	2.5E-08	1.2E-01	3.0E-09	2.9E-04	3.4E-02	1.6E-08	2.2E-08	3.4E-02	1.2E-12	2.1E-08
SVOC	Phenanthrene	85-01-8	1.7E+00		2.1E-08			1.3E-01	3.8E-08			3.9E-05			3.4E-08			
SVOC	Pyrene	129-00-0	9.4E+00		1.1E-07			1.3E-01	2.1E-07			3.5E-05			1.9E-07			
PEST	Chlordane (total)	57-74-9	7.6E-01		9.3E-09	3.5E-01	3.3E-09	4.0E-02	5.3E-09	3.5E-01	1.8E-09	3.6E-06	1.0E-01	5.9E-10	1.5E-08	1.0E-01	2.5E-12	5.7E-09
PEST	Dieldrin	60-57-1	5.1E-02		6.2E-10	1.6E+01	1.0E-08	1.0E-01	8.8E-10	1.6E+01	1.4E-08	3.3E-07	4.6E+00	2.5E-09	1.0E-09	4.6E+00	7.7E-12	2.7E-08
PEST	Endrin	72-20-8	8.7E-03		1.1E-10			1.0E-01	1.5E-10			5.3E-08			1.7E-10			
PEST	Heptachlor epoxide	1024-57-3	5.7E-03		7.0E-11	9.1E+00	6.4E-10	1.0E-01	9.9E-11	9.1E+00	9.0E-10	1.5E-08	2.6E+00	6.6E-11	1.1E-10	2.6E+00	4.9E-13	1.6E-09
PCB	PCBs (total)	1336-36-3	6.8E-01		8.3E-09	2.0E+00	1.7E-08	1.4E-01	1.6E-08	2.0E+00	3.3E-08	7.7E-06	5.7E-01	7.2E-09	1.4E-08	5.7E-01	1.3E-11	5.7E-08
INORG	Arsenic	7440-38-2	7.1E+00	0.6	8.7E-08	9.5E+00	4.9E-07	3.0E-02	3.7E-08	9.5E+00	3.5E-07		4.3E+00		1.4E-07	4.3E+00	9.9E-10	8.4E-07
INORG	Cadmium	7440-43-9	2.1E+01		2.6E-07			1.0E-03	3.6E-09				4.2E+00		4.2E-07	4.2E+00	2.9E-09	2.9E-09
INORG	Chromium III	16065-83-1	1.6E+02		2.0E-06										3.3E-06			
INORG	Chromium VI	18540-29-9	3.7E+00		4.5E-08	5.0E-01	2.3E-08			2.0E+01			1.5E+02		7.4E-08	1.5E+02	1.8E-08	4.1E-08
INORG	Copper	7440-50-8	2.1E+03		2.6E-05										4.2E-05			
INORG	Cyanide (total)	57-12-5	9.1E+00		1.1E-07							1.1E-03			1.8E-07			
INORG	Lead	7439-92-1	3.1E+03		3.7E-05										6.1E-05			
INORG	Mercury	7439-97-6	3.5E+00		4.3E-08							2.0E-04			7.1E-08			
INORG	Nickel	7440-02-0	1.7E+02		2.0E-06								2.6E-01		3.3E-06	2.6E-01	1.4E-09	1.4E-09
INORG	Silver	7440-22-4	4.8E+00		5.9E-08										9.6E-08			
INORG	Zinc	7440-66-6	2.1E+03		2.6E-05										4.2E-05			
						Cumulative Risk:	**6E-07**				**5E-07**			**4E-08**			**3E-08**	**1E-06**

Notes:

Exposure Concentrations:

Soil exposure concentrations (C_{soil}) based upon maximum detected concentrations in soil with the exception of the following chemicals which are based upon the 95% upper confidence limits (UCL) on the mean:
Benzo(a)pyrene, PCBs (total), and arsenic.

Cr III concentration estimated using maximum detected Cr (total) and subtracting the estimated Cr VI concentration determined based upon the average ratio Cr VI:Cr (total) observed in soil sampling data.

Exposure Factors:

Soil Ingestion Rate (mg/d) = 200
Adherence Factor (mg/cm^2) = 0.8
Skin Surface Area (cm^2/d) = 3,527
Body Weight (kg) = 80
Exposure Frequency (d/yr) = 125
Exposure Time (h/d) = 8
Exposure Duration (yr) = 1
Averaging Time, cancer (d) = 25,550

Air Concentrations:

The concentration of chemicals in air due to vapor emissions based upon estimated normalized average vapor Flux (kg/m^2-s) form unsaturated soil using steady state model derived by Jury, Spencer, and Farmer (1983).

Disp.Factor C/Q (kg/m^3)/(kg/m^2-s): 19.3

The concentration of particulates in the air is assumed to be no more than the California Ambient Air Quality Standards for PM_{10} of 20 ug/m^3.

Other Acronyms:

RBA - Relative Bioavailabilty Adjustment Factor
LADD - Lifetime Average Daily Dose
ABS_{derm} - Dermal Absorption Factor

Table 1b:

Noncancer Hazard Index Calculations for Exposure of Construction Worker to Soil

Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes
Chem Group	Chemical	CASRN	C_{soil} (mg/kg)	RBA	ADD (mg/kg/d)	RfD_{oral} (mg/kg/d)	HQ	ABS_{derm}	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ	HQ
SVOC	Acenaphthene	83-32-9	5.8E-01		4.9E-07	2.0E-01	2.5E-06	1.30E-01	9.1E-07	2.0E-01	4.5E-06	3.8E-05	2.4E-01	1.8E-05	1.2E-08	2.4E-01	5.5E-09	2.5E-05
SVOC	Benzo(a)anthracene	56-55-3	7.0E+00		6.0E-06			1.30E-01	1.1E-05			1.0E-05			1.4E-07			
SVOC	Benzo(a)pyrene	50-32-8	2.3E-01		2.0E-07	3.0E-04	6.6E-04	1.30E-01	3.6E-07	3.0E-04	1.2E-03	1.2E-07	2.0E-06	6.6E-03	4.6E-09	2.0E-06	2.6E-04	8.7E-03
SVOC	Benzo(b)fluoranthene	205-99-2	9.8E+00		8.4E-06			1.30E-01	1.5E-05			3.0E-05			2.0E-07			
SVOC	Chrysene	218-01-9	8.6E+00		7.3E-06			1.30E-01	1.3E-05			4.5E-05			1.7E-07			
SVOC	Dibenz(a,h)anthracene	53-70-3	7.6E-01		6.5E-07			1.30E-01	1.2E-06			5.6E-08			1.5E-08			
SVOC	Fluoranthene	206-44-0	8.1E+00		7.0E-06	4.0E-01	1.7E-05	1.30E-01	1.3E-05	4.0E-01	3.2E-05	3.8E-05			1.6E-07			4.9E-05
SVOC	Naphthalene	91-20-3	1.1E+00		9.4E-07	2.0E-01	4.7E-06	1.30E-01	1.7E-06	2.0E-01	8.6E-06	2.9E-04	3.0E-03	1.1E-02	2.2E-08	3.0E-03	8.4E-07	1.1E-02
SVOC	Phenanthrene	85-01-8	1.7E+00		1.5E-06	3.0E-01	4.9E-06	1.30E-01	2.7E-06	3.0E-01	8.9E-06	3.9E-05	1.2E-01	3.7E-05	3.4E-08	1.2E-01	3.2E-08	5.1E-05
SVOC	Pyrene	129-00-0	9.4E+00		8.0E-06	3.0E-01	2.7E-05	1.30E-01	1.5E-05	3.0E-01	4.9E-05	3.5E-05	1.2E-01	3.3E-05	1.9E-07	1.2E-01	1.8E-07	1.1E-04
PEST	Chlordane (total)	57-74-9	7.6E-01		6.5E-07	6.0E-04	1.1E-03	4.00E-02	3.7E-07	6.0E-04	6.1E-04	3.6E-06	7.0E-04	5.9E-04	1.5E-08	7.0E-04	2.5E-06	2.3E-03
PEST	Dieldrin	60-57-1	5.1E-02		4.4E-08	1.0E-04	4.4E-04	1.00E-01	6.2E-08	1.0E-04	6.2E-04	3.3E-07	2.0E-04	1.9E-04	1.0E-09	2.0E-04	5.8E-07	1.2E-03
PEST	Endrin	72-20-8	8.7E-03		7.4E-09	6.0E-04	1.2E-05	1.00E-01	1.1E-08	6.0E-04	1.8E-05	5.3E-08			1.7E-10			3.0E-05
PEST	Heptachlor epoxide	1024-57-3	5.7E-03		4.9E-09	1.3E-05	3.8E-04	1.00E-01	6.9E-09	1.3E-05	5.3E-04	1.5E-08	5.2E-05	3.4E-05	1.1E-10	5.2E-05	2.5E-07	9.4E-04
PCB	PCBs (total)	1336-36-3	6.8E-01		5.8E-07			1.40E-01	1.1E-06			7.7E-06			1.4E-08			
INORG	Arsenic	7440-38-2	7.1E+00	0.6	6.1E-06	5.0E-03	7.3E-04	3.00E-02	2.6E-06	5.0E-03	5.1E-04		1.5E-05		1.4E-07	1.5E-05	1.1E-03	2.3E-03
INORG	Cadmium	7440-43-9	2.1E+01		1.8E-05	1.0E-03	1.8E-02	1.00E-03	2.5E-07	2.5E-05	1.0E-02		9.0E-04		4.2E-07	9.0E-04	5.3E-05	2.8E-02
INORG	Chromium III	16065-83-1	1.6E+02		1.4E-04	1.5E+00	9.4E-05			2.0E-02			5.0E-03		3.3E-06	5.0E-03	7.5E-05	1.7E-04
INORG	Chromium VI	18540-29-9	3.7E+00		3.2E-06	5.0E-03	6.3E-04			1.3E-04			1.0E-03		7.4E-08	1.0E-03	8.4E-06	6.4E-04
INORG	Copper	7440-50-8	2.1E+03		1.8E-03	4.0E-02	4.5E-02			4.0E-02					4.2E-05			4.5E-02
INORG	Cyanide (total)	57-12-5	9.1E+00		7.8E-06							1.1E-03			1.8E-07			
INORG	Lead	7439-92-1	3.1E+03		2.6E-03										6.1E-05			
INORG	Mercury	7439-97-6	3.5E+00		3.0E-06	1.6E-04	1.9E-02			1.6E-04		2.0E-04	3.0E-04	7.7E-02	7.1E-08	3.0E-04	2.7E-05	9.5E-02
INORG	Nickel	7440-02-0	1.7E+02		1.4E-04	2.0E-02	7.1E-03			8.0E-04			1.4E-05		3.3E-06	1.4E-05	2.7E-02	3.4E-02
INORG	Silver	7440-22-4	4.8E+00		4.1E-06	5.0E-03	8.2E-04			2.0E-04			1.0E-05		9.6E-08	1.0E-05	1.1E-03	1.9E-03
INORG	Zinc	7440-66-6	2.1E+03		1.8E-03	3.0E-01	6.1E-03			3.0E-01					4.2E-05			6.1E-03
						Hazard Index:	4E-01				2E-02			1E-01			4E-02	5E-01

Notes:

Exposure Concentrations:

Soil exposure concentrations (C_{soil}) based upon maximum detected concentrations in soil with the exception of the following chemicals which are based upon the 95% upper confidence limits (UCL) on the mean:

Benzo(a)pyrene, PCBs (total), and arsenic.

Cr III concentration estimated using maximum detected Cr (total) and subtracting the estimated Cr VI concentration determined based upon the average ratio Cr VI:Cr (total) observed in soil sampling data.

Exposure Factors:

Soil Ingestion Rate (mg/d) =	200
Adherence Factor (mg/cm^2) =	0.8
Skin Surface Area (cm^2/d) =	3,527
Body Weight (kg) =	80
Exposure Frequency (d/yr) =	125
Exposure Time (h/d) =	8
Exposure Duration (yr) =	1
Averaging Time, noncancer (d) =	365

Air Concentrations:

The concentration of chemicals in air due to vapor emissions based upon estimated normalized average vapor Flux (kg/m^2-s) form unsaturated soil using steady state model derived by Jury, Spencer, and Farmer (1983).

Disp.Factor C/Q (kg/m^3)/(kg/m^2-s): 19.3

The concentration of particulates in the air is assumed to be no more than the California Ambient Air Quality Standards for PM_{10} of 20 ug/m^3.

Other Acronyms:

HQ - Hazard Quotient

RBA - Relative Bioavailabilty Adjustment Factor

LADD - Lifetime Average Daily Dose

ABS_{derm} - Dermal Absorption Factor

Table 2a:

Cancer Risk Calculations for Exposure of Construction Worker to Sludge

Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes
Chem Group	**Chemical**	**CASRN**	**C_{soil}** (mg/kg)	**RBA**	**LADD** (mg/kg/d)	**SF_{oral}** $(mg/kg/d)^{-1}$	**Risk**	**ABS_{derm}**	**LADD** (mg/kg/d)	**SF_{derm}** $(mg/kg/d)^{-1}$	**Risk**	**C_{air}** (mg/m^3)	**URF** (m^3/mg)	**Risk**	**C_{air}** (mg/m^3)	**URF** $(mg/m^3)^{-1}$	**Risk**	**Risk**
INORG	Arsenic	7440-38-2	4.7E+00	0.6	5.7E-08	9.5E+00	3.3E-07	3.0E-02	2.4E-08	9.5E+00	2.3E-07		4.3E+00		9.4E-08	4.3E+00	6.6E-10	5.6E-07
INORG	Cadmium	7440-43-9	3.2E+00		3.9E-08			1.0E-03	5.5E-10				4.2E+00		6.4E-08	4.2E+00	4.4E-10	4.4E-10
INORG	Chromium III	16065-83-1	4.2E+02		5.1E-06										8.4E-06			
INORG	Chromium VI	18540-29-9	9.5E+00		1.2E-07	5.0E-01	5.8E-08			2.0E+01			1.5E+02		1.9E-07	1.5E+02	4.6E-08	1.0E-07
INORG	Copper	7440-50-8	2.0E+02		2.4E-06										4.0E-06			
INORG	Lead	7439-92-1	1.6E+03		2.0E-05										3.2E-05			
INORG	Mercury	7439-97-6	1.5E+00		1.8E-08							8.5E-05			3.0E-08			
INORG	Nickel	7440-02-0	6.4E+01		7.8E-07								2.6E-01		1.3E-06	2.6E-01	5.4E-10	5.4E-10
INORG	Silver	7440-22-4	2.0E+01		2.4E-07										4.0E-07			
INORG	Zinc	7440-66-6	6.0E+02		7.3E-06										1.2E-05			
						Cumulative Risk:	**4E-07**				**2E-07**						**5E-08**	**7E-07**

Notes:

Exposure Concentrations:

Sludge exposure concentrations (C_{soil}) based upon maximum detected concentrations in sludge.

Cr III concentration estimated using maximum detected Cr (total) and subtracting the estimated Cr VI concentration determined based upon the average ratio Cr VI:Cr (total) observed in soil sampling data.

Exposure Factors:

Soil Ingestion Rate (mg/d) =	200
Adherence Factor (mg/cm^2) =	0.8
Skin Surface Area (cm^2/d) =	3,527
Body Weight (kg) =	80
Exposure Frequency (d/yr) =	125
Exposure Time (h/d) =	8
Exposure Duration (yr) =	1
Averaging Time, cancer (d) =	25,550

Air Concentrations:

The concentration of chemicals in air due to vapor emissions based upon estimated normalized average vapor Flux (kg/m^2-s) form unsaturated soil using steady state model derived by Jury, Spencer, and Farmer (1983).

Disp.Factor C/Q (kg/m^3)/(kg/m^2-s): 19.3

The concentration of particulates in the air is assumed to be no more than the California Ambient Air Quality Standards for PM_{10} of 20 ug/m^3.

Other Acronyms:

RBA - Relative Bioavailabilty Adjustment Factor

LADD - Lifetime Average Daily Dose

ABS_{derm} - Dermal Absorption Factor

Table 2b:

Noncancer Hazard Index Calculations for Exposure of Construction Worker to Sludge

Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes
Chem Group	Chemical	CASRN	C_{soil} (mg/kg)	RBA	ADD (mg/kg/d)	RfD_{oral} (mg/kg/d)	HQ	ABS_{derm}	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ	HQ
INORG	Arsenic	7440-38-2	4.7E+00	0.6	4.0E-06	5.0E-03	4.8E-04	3.00E-02	1.7E-06	5.0E-03	3.4E-04		1.5E-05		9.4E-08	1.5E-05	7.2E-04	1.5E-03
INORG	Cadmium	7440-43-9	3.2E+00		2.7E-06	1.0E-03	2.7E-03	1.00E-03	3.9E-08	2.5E-05	1.5E-03		9.0E-04		6.4E-08	9.0E-04	8.1E-06	4.3E-03
INORG	Chromium III	16065-83-1	4.2E+02		3.6E-04	1.5E+00	2.4E-04			2.0E-02			5.0E-03		8.4E-06	5.0E-03	1.9E-04	4.3E-04
INORG	Chromium VI	18540-29-9	9.5E+00		8.1E-06	5.0E-03	1.6E-03			1.3E-04			1.0E-03		1.9E-07	1.0E-03	2.2E-05	1.6E-03
INORG	Copper	7440-50-8	2.0E+02		1.7E-04	4.0E-02	4.3E-03			4.0E-02					4.0E-06			4.3E-03
INORG	Lead	7439-92-1	1.6E+03		1.4E-03										3.2E-05			
INORG	Mercury	7439-97-6	1.5E+00		1.3E-06	1.6E-04	8.0E-03			1.6E-04		8.5E-05	3.0E-04	3.2E-02	3.0E-08	3.0E-04	1.1E-05	4.0E-02
INORG	Nickel	7440-02-0	6.4E+01		5.5E-05	2.0E-02	2.7E-03			8.0E-04			1.4E-05		1.3E-06	1.4E-05	1.0E-02	1.3E-02
INORG	Silver	7440-22-4	2.0E+01		1.7E-05	5.0E-03	3.4E-03			2.0E-04			1.0E-05		4.0E-07	1.0E-05	4.6E-03	8.0E-03
INORG	Zinc	7440-66-6	6.0E+02		5.1E-04	3.0E-01	1.7E-03			3.0E-01					1.2E-05			1.7E-03
						Hazard Index:	2E-01				2E-03			3E-02			2E-02	3E-01

Notes:

Exposure Concentrations:

Sludge exposure concentrations (C_{soil}) based upon maximum detected concentrations in sludge.

Cr III concentration estimated using maximum detected Cr (total) and subtracting the estimated Cr VI concentration determined based upon the average ratio Cr VI:Cr (total) observed in soil sampling data.

Exposure Factors:

Soil Ingestion Rate (mg/d) =	200
Adherence Factor (mg/cm^2) =	0.8
Skin Surface Area (cm^2/d) =	3,527
Body Weight (kg) =	80
Exposure Frequency (d/yr) =	125
Exposure Time (h/d) =	8
Exposure Duration (yr) =	1
Averaging Time, noncancer (d) =	365

Air Concentrations:

The concentration of chemicals in air due to vapor emissions based upon estimated normalized average vapor Flux (kg/m^2-s) form unsaturated soil using steady state model derived by Jury, Spencer, and Farmer (1983).

Disp.Factor C/Q (kg/m^3)/(kg/m^2-s): 19.3

The concentration of particulates in the air is assumed to be no more than the California Ambient Air Quality Standards for PM_{10} of 20 ug/m^3.

Other Acronyms:

HQ - Hazard Quotient

RBA - Relative Bioavailabilty Adjustment Factor

LADD - Lifetime Average Daily Dose

ABS_{derm} - Dermal Absorption Factor

Attachment A

Data Tables

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	A EAST 1B A EAST 1B BENCH -- 8/4/2021	A EAST 2B A EAST 2B BENCH -- 8/4/2021	A EAST 2T A EAST 2T BENCH -- 8/4/2021	A EAST 3B A EAST 3B BENCH -- 8/4/2021	A EAST 4B A EAST 4B BENCH -- 8/4/2021	A WEST 1B A WEST 1B-BENCH -- 8/4/2021	A WEST 2T A WEST 2T BENCH -- 8/4/2021	A WEST 3B A WEST 3B BENCH -- 8/4/2021	A WEST 4B A WEST 4B BENCH -- 8/4/2021
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	ND (0.0605 J4)	0.091 J4	ND (0.0608 J4)	0.0622 J4	0.149 J4	0.0626 J4	0.0478 J; J4	0.0414 J; J4	0.0538 J; J4
Benzene	--	33	0.025	0.025	0.000575 J	ND (0.00117)	ND (0.00122)	ND (0.00109)	ND (0.00119)	0.000991 J	0.00084 J	0.00108	ND (0.00113)
2-Butanone	--	120000	6.1	15	ND (0.121)	0.119	ND (0.122)	0.076 J	0.153	ND (0.104)	ND (0.105)	ND (0.103)	ND (0.113)
Chloroform	--	34	0.023	0.023	ND (0.00302)	ND (0.00292)	ND (0.00304)	ND (0.00271)	ND (0.00298)	0.0013 J	ND (0.00262)	ND (0.00258)	ND (0.00281)
Cumene	--	--	--	--	ND (0.00302)	ND (0.00292)	ND (0.00304)	ND (0.00271)	ND (0.00298)	ND (0.00261)	ND (0.00262)	ND (0.00258)	ND (0.00281)
p-Cymene	--	--	--	--	ND (0.00605)	ND (0.00584)	ND (0.00608)	ND (0.00543)	ND (0.00596)	ND (0.00521)	ND (0.00525)	ND (0.00516)	ND (0.00563)
1,2-Dichlorobenzene	--	7800	1	1	ND (0.00605)	ND (0.00584)	ND (0.00608)	ND (0.00543)	ND (0.00596)	ND (0.00521)	ND (0.00525)	ND (0.00516)	ND (0.00563)
1,4-Dichlorobenzene	--	280	0.2	0.2	ND (0.00605)	ND (0.00584)	ND (0.00608)	ND (0.00543)	ND (0.00596)	ND (0.00521)	ND (0.00525)	ND (0.00516)	ND (0.00563)
1,2-Dichloroethane	--	45	0.007	0.031	ND (0.00302)	ND (0.00292)	ND (0.00304)	ND (0.00271)	ND (0.00298)	ND (0.00261)	ND (0.00262)	ND (0.00258)	ND (0.00281)
Ethyl Benzene	--	540	0.43	0.43	ND (0.00302)	ND (0.00292)	ND (0.00304)	ND (0.00271)	0.00116 J	0.00269	0.00331	0.00279	ND (0.00281)
Methyl tert-butyl ether	--	4100	0.028	2.5	ND (0.00121)	ND (0.00117)	ND (0.00122)	ND (0.00109)	ND (0.00119)	ND (0.00104)	ND (0.00105)	ND (0.00103)	ND (0.00113)
Methylene Chloride	--	490	0.12	0.19	ND (0.0302)	ND (0.0292)	ND (0.0304)	ND (0.0271)	ND (0.0298)	ND (0.0261)	ND (0.0262)	0.00841 J	ND (0.0281)
Propylbenzene	--	--	--	--	ND (0.00605)	ND (0.00584)	ND (0.00608)	ND (0.00543)	ND (0.00596)	ND (0.00521)	ND (0.00525)	ND (0.00516)	ND (0.00563)
Tetrachloroethene	--	33	0.08	0.08	ND (0.00302)	ND (0.00292)	ND (0.00304)	ND (0.00271)	ND (0.00298)	ND (0.00261)	ND (0.00262)	ND (0.00258)	ND (0.00281)
Toluene	--	4700	3.2	10	0.00167 J	0.00163 J	ND (0.00608)	ND (0.00543)	0.00358 J	0.00964	0.0103	0.0107	0.00225 J
1,2,3-Trimethylbenzene	--	--	--	--	ND (0.00605)	ND (0.00584)	ND (0.00608)	ND (0.00543)	ND (0.00596)	ND (0.00521)	ND (0.00525)	ND (0.00516)	ND (0.00563)
1,2,4-Trimethylbenzene	--	--	--	--	ND (0.00605)	ND (0.00584)	ND (0.00608)	ND (0.00543)	ND (0.00596)	0.00245 J	0.00226 J	0.00191 J	ND (0.00563)
1,3,5-Trimethylbenzene	--	--	--	--	ND (0.00605)	ND (0.00584)	ND (0.00608)	ND (0.00543)	ND (0.00596)	ND (0.00521)	ND (0.00525)	ND (0.00516)	ND (0.00563)
Xylenes (total)	--	2400	2.1	10	ND (0.00786)	0.00144 J	0.00113 J	0.00109 J	0.0051 J	0.0105	0.0126	0.00958	0.0018 J
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	ND (0.00663)	ND (0.0065)	ND (0.00665)	ND (0.00626)	ND (0.00658)	0.00361 J	0.00531 J	0.00405 J	ND (0.00638)
Acenaphthylene	0.64	--	6.4	6.4	ND (0.00663)	0.00321 J	0.00825 J	0.00291 J	0.00415 J	ND (0.00613)	ND (0.00615)	0.00274 J	0.00333 J
Anthracene	1.1	50000	1.9	1.9	ND (0.00663)	0.00285 J	0.00971 J	ND (0.00626)	ND (0.00658)	ND (0.00613)	ND (0.00615)	ND (0.0061)	ND (0.00638)
Benzo(a)anthracene	1.6	110	10	10	0.00575 J	0.0186	0.00916	0.00678	0.0137	0.0139	0.0109	0.00832	0.00418 J; J3
Benzo(a)pyrene	1.6	11	5.7	5.7	0.00702	0.0297	0.0136	0.00777	0.0164	0.0183	0.0132	0.00993	0.00565 J; J3
Benzo(b)fluoranthene	--	110	5.4	75	0.0119	0.0418	0.0186	0.0127	0.029	0.0267	0.0233	0.0174	0.00814 J3
Benzo(g,h,i)perylene	--	--	27	27	0.00958	0.028	0.0162	0.00883	0.0142	0.0128	0.0102	0.0108	0.00742 J3
Benzo(k)fluoranthene	--	910	4.8	39	0.00356 J	0.0109	0.00572 J	0.00384 J	0.00501 J	0.00874	0.00668	0.00433 J	ND (0.00638)
Chrysene	2.8	9100	2.2	10	0.00656 J	0.0212	0.00981	0.00862	0.0153	0.0199	0.0147	0.00808	0.00435 J; J3
Dibenz(a,h)anthracene	0.26	11	29	390	ND (0.00663)	0.00524 J	0.00266 J	ND (0.00626)	0.00548 J	0.00283 J	0.00189 J	0.0019 J	ND (0.00638 J3)
Fluoranthene	5.1	6700	86	86	0.0118	0.0273	0.0151	0.0176	0.022	0.0261	0.0363	0.0321	0.0117 J3
Fluorene	0.54	6700	6	6	ND (0.00663)	ND (0.0065)	ND (0.00665)	ND (0.00626)	0.00227 J	ND (0.00613)	ND (0.00615)	ND (0.0061)	ND (0.00638)
Indeno(1,2,3-cd)pyrene	--	110	16	32	0.00681	0.024	0.0127	0.0067	0.00922	0.0119	0.00787	0.00816	0.0044 J; J3
1-Methylnaphthalene	--	--	--	--	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
2-Methylnaphthalene	0.67	670	0.88	0.88	0.00685 J	ND (0.0217)	ND (0.0222)	ND (0.0209)	0.00708 J	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
Naphthalene	2.1	400	0.042	1.2	0.00526 J	ND (0.0146)	ND (0.0152)	ND (0.0136)	0.00607 J	ND (0.013 J3)	ND (0.0131 J3)	ND (0.0129 J3)	0.00461 J
Phenanthrene	1.5	--	11	11	0.008	0.0131	0.00921	0.0115	0.0202	0.00669	0.011	0.0132	0.00799
Phenol	--	98000	0.16	18	ND (0.736)	ND (0.722)	ND (0.369)	ND (0.694)	ND (0.365)	ND (0.34)	ND (0.683)	0.0421 J	ND (0.708)
bis(2-Ethylhexyl)phthalate	--	950	190	640	ND (0.736)	ND (0.722)	ND (0.369)	ND (0.694)	ND (0.365)	0.165 J	0.385 J	0.204 J	1.33
Butylbenzylphthalate	--	--	--	--	ND (0.736)	ND (0.722)	0.0133 J	ND (0.694)	ND (0.365)	ND (0.34)	ND (0.683)	ND (0.677)	ND (0.708)
Di-n-butylphthalate	--	--	--	--	ND (0.736)	ND (0.722)	ND (0.369)	ND (0.694)	ND (0.365)	0.0603 J	0.122 J	0.053 J	0.0558 J
Di-n-octylphthalate	--	--	--	--	ND (0.736)	ND (0.722)	ND (0.369)	ND (0.694)	ND (0.365)	ND (0.34)	ND (0.683)	ND (0.677)	ND (0.708)
Pyrene	2.6	5000	45	45	0.0148	0.0371	0.0205	0.0252	0.0398	0.0387	0.0553	0.0389	0.0186 J3
Pesticides													
Aldrin	--	1	8.4	8.4	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
Chlordane (total)	0.0048	14	23	23	ND (0.331)	ND (0.325)	ND (0.332)	ND (0.313)	ND (0.329)	ND (0.306)	ND (0.307)	ND (0.305)	ND (0.319)
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
4,4'-DDE	--	57	29	29	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
4,4'-DDT	--	57	5.6	5.6	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
Dieldrin	0.0043	1.1	0.00046	0.0063	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
Endosulfan II	--	--	--	--	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
Endrin	--	74	0.0076	0.0076	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)
Heptachlor epoxide	--	1.9	0.00018	0.006	ND (0.0221)	ND (0.0217)	ND (0.0222)	ND (0.0209)	ND (0.0219)	ND (0.0204)	ND (0.0205)	ND (0.0203)	ND (0.0213)

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	A EAST 1B A EAST 1B BENCH -- 8/4/2021	A EAST 2B A EAST 2B BENCH -- 8/4/2021	A EAST 2T A EAST 2T BENCH -- 8/4/2021	A EAST 3B A EAST 3B BENCH -- 8/4/2021	A EAST 4B A EAST 4B BENCH -- 8/4/2021	A WEST 1B A WEST 1B-BENCH -- 8/4/2021	A WEST 2T A WEST 2T BENCH -- 8/4/2021	A WEST 3B A WEST 3B BENCH -- 8/4/2021	A WEST 4B A WEST 4B BENCH -- 8/4/2021
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	18.8 J	15.9 J	16.2 J	6.94	13	24.3	23.7 J3; J6	34.7 J	57.9
Gasoline Range Organics	--	1800	1100	4900	ND (0.11)	ND (0.108)	ND (0.111)	ND (0.104)	ND (0.11)	ND (0.102)	ND (0.102)	ND (0.102)	ND (0.106)
Motor Oil	--	54000	--	--	96	108	102	21.1	55.9	75.6	96.4	161	185
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	ND (0.0188)	ND (0.0184)	ND (0.0188)	ND (0.0177)	ND (0.0186)	ND (0.0174)	ND (0.0174)	ND (0.0173)	ND (0.0181)
Aroclor-1260	--	--	--	--	0.417 P	0.266	2.86 P	0.166	ND (0.0186)	0.23 P	0.43 P	0.464 J5; P	0.831 P
PCBs (total)	0.18	5.5	330	330	0.417 P	0.266	2.86 P	0.166	ND (0.0373)	0.23 P	0.43 P	0.464 J5; P	0.831 P
Metals													
Antimony	--	50	--	--	ND (2.21)	ND (2.17)	1.16 J	ND (2.09)	ND (2.19)	ND (2.04)	0.611 J	ND (2.03)	ND (2.13)
Arsenic	0.07	0.98	--	--	5.54	4.16	6.88	7.61	6.31	13.2	3.5	4.23	6.34
Barium	--	3000	--	--	244	212	244	188	256	197	296	216	345
Beryllium	--	27	--	--	0.404	0.364	0.348	0.247	0.335	0.339	0.142 J	0.214	0.394
Cadmium	0.0096	51	--	--	2.22	2.66	3.33	1.75	3.82	2.56	4.05	4.18	9.03
Chromium (total)	0.37	--	--	--	51.5	61.1	76	42.9	65.5	48.1	82.1	45.6	77.1
Chromium VI	--	2.8	--	--	ND (2.21 P1)	ND (2.17)	ND (2.22)	ND (2.09)	ND (2.19)	ND (2.04)	ND (2.05)	ND (2.03)	ND (2.13)
Cobalt	--	28	--	--	13.1	12.6	13.8	9.7	13.4	11.6	16.5	10.6	14.4
Copper	0.27	14000	--	--	73.4	76.7	203	51.1	104	57.7	146	90.8	174
Cyanide (total)	--	22	0.0034	0.0034	**0.172 J**	**0.346**	**0.207 J**	**0.143 J**	**0.227 J**	**1.29**	**0.665 P1**	**0.298**	**0.567**
Lead	0.218	160	--	--	161	166	167	97.1	189	98.4	130	179	327
Mercury	0.0007	44	--	--	0.138	0.222	0.351	0.137	0.369	0.19	0.23	0.217	0.721
Molybdenum	--	1800	--	--	0.75	0.646	2.06	0.435 J	1.04	0.713	0.737	1.23	1.87
Nickel	0.12	86	--	--	60.6	68.9	89.7	53.1	79.7	70.4	92.4	55.5	80.1
Perchlorate	--	250	--	--	0.0337 J	0.0169 J	0.0199 J; P1	0.026 J	0.0332 J	ND (0.0409)	ND (0.041)	ND (0.0406)	ND (0.0425)
Selenium	--	1700	--	--	1.24 J	0.893 J	1.31 J	1.77 J	1.54 J	1.1 J	2.47	1.45 J	1.38 J
Silver	0.0037	1800	--	--	0.304 J	0.255 J	0.297 J	0.161 J	0.612 J	0.184 J	0.387 J	0.357 J	1.19
Thallium	--	3.5	--	--	ND (2.21)	ND (2.17)	ND (2.22)	ND (2.09)	ND (2.19)	ND (2.04)	ND (2.05)	ND (2.03)	ND (2.13)
Vanadium	--	470	--	--	60.3	55	54.8	51.2	54.9	51.3	58.7	44.4	57.3
Zinc	0.41	110000	--	--	209	243	281	152	259	144	228	221	399

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	A WEST 5B A WEST 5B BENCH -- 8/4/2021	B EAST 5B B EAST 5B BENCH -- 8/4/2021	B EAST 6B B EAST 6B BENCH -- 8/4/2021	B EAST 7B B EAST 7B BENCH -- 8/4/2021	B EAST 8B B EAST 8B BENCH -- 8/4/2021	B WEST 6B B WEST 6B-BENCH -- 8/4/2021	B WEST 6T B WEST 6T-BENCH -- 8/4/2021	B WEST 7T B WEST 7T BENCH -- 8/4/2021	B WEST 8T B WEST 8T BENCH -- 8/4/2021
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	0.0491 J; J4	0.081 J4	0.04 J; J4	ND (0.0613 J4)	ND (0.0553 J4)	ND (0.0548 J4)	0.0513 J; J4	0.156 J4	ND (0.0562 J4)
Benzene	--	33	0.025	0.025	0.000671 J	ND (0.00111)	ND (0.00107)	ND (0.00123)	ND (0.00111)	ND (0.0011)	ND (0.0013)	ND (0.00113)	ND (0.00112)
2-Butanone	--	120000	6.1	15	ND (0.103)	0.143	0.119	ND (0.123)	ND (0.111)	0.0731 B ; J	0.0853 B ; J	0.124 B	0.0814 B ; J
Chloroform	--	34	0.023	0.023	ND (0.00258)	ND (0.00278)	ND (0.00267)	ND (0.00307)	ND (0.00276)	ND (0.00274)	ND (0.00325)	ND (0.00283)	ND (0.00281)
Cumene	--	--	--	--	ND (0.00258)	ND (0.00278)	ND (0.00267)	ND (0.00307)	ND (0.00276)	ND (0.00274)	ND (0.00325)	ND (0.00283)	ND (0.00281)
p-Cymene	--	--	--	--	ND (0.00516)	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	ND (0.00548)	ND (0.0065)	ND (0.00567)	ND (0.00562)
1,2-Dichlorobenzene	--	7800	1	1	ND (0.00516)	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	ND (0.00548)	ND (0.0065)	ND (0.00567)	ND (0.00562)
1,4-Dichlorobenzene	--	280	0.2	0.2	ND (0.00516)	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	ND (0.00548)	ND (0.0065)	ND (0.00567)	ND (0.00562)
1,2-Dichloroethane	--	45	0.007	0.031	ND (0.00258)	ND (0.00278)	ND (0.00267)	ND (0.00307)	ND (0.00276)	ND (0.00274)	ND (0.00325)	ND (0.00283)	ND (0.00281)
Ethyl Benzene	--	540	0.43	0.43	0.00152 J	ND (0.00278)	ND (0.00267)	ND (0.00307)	ND (0.00276)	0.000876 J	ND (0.00325)	ND (0.00283)	ND (0.00281)
Methyl tert-butyl ether	--	4100	0.028	2.5	0.000542 J	ND (0.00111)	ND (0.00107)	ND (0.00123)	ND (0.00111)	ND (0.0011)	ND (0.0013)	ND (0.00113)	ND (0.00112)
Methylene Chloride	--	490	0.12	0.19	0.00729 J	ND (0.0278)	ND (0.0267)	ND (0.0307)	ND (0.0276)	ND (0.0274)	ND (0.0325)	ND (0.0283)	ND (0.0281)
Propylbenzene	--	--	--	--	ND (0.00516)	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	ND (0.00548)	ND (0.0065)	ND (0.00567)	ND (0.00562)
Tetrachloroethene	--	33	0.08	0.08	ND (0.00258)	ND (0.00278)	ND (0.00267)	ND (0.00307)	ND (0.00276)	ND (0.00274)	ND (0.00325)	ND (0.00283)	ND (0.00281)
Toluene	--	4700	3.2	10	0.00637	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	0.00254 J	0.00202 J	0.00153 J	ND (0.00562)
1,2,3-Trimethylbenzene	--	--	--	--	ND (0.00516)	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	ND (0.00548)	ND (0.0065)	ND (0.00567)	ND (0.00562)
1,2,4-Trimethylbenzene	--	--	--	--	ND (0.00516)	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	ND (0.00548)	ND (0.0065)	ND (0.00567)	ND (0.00562)
1,3,5-Trimethylbenzene	--	--	--	--	ND (0.00516)	ND (0.00555)	ND (0.00535)	ND (0.00613)	ND (0.00553)	ND (0.00548)	ND (0.0065)	ND (0.00567)	ND (0.00562)
Xylenes (total)	--	2400	2.1	10	0.00555 J	0.0013 J	0.0011 J	ND (0.00797)	ND (0.00718)	0.00243 J	0.00163 J	0.00139 J	ND (0.00731)
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	0.00297 J	0.00265 J	ND (0.00621)	ND (0.00668)	ND (0.00632)	ND (0.00629)	ND (0.0069)	ND (0.0064)	ND (0.00637)
Acenaphthylene	0.64	--	6.4	6.4	0.00699 J	0.0025 J	ND (0.00621)	0.00253 J	0.00235 J	0.00243 J	ND (0.0069)	0.00382 J	0.00267 J
Anthracene	1.1	50000	1.9	1.9	ND (0.0061)	0.0028 J	ND (0.00621)	ND (0.00668)	0.00288 J	ND (0.00629)	ND (0.0069)	ND (0.0064)	ND (0.00637)
Benzo(a)anthracene	1.6	110	10	10	0.00635	0.0254	0.0101	0.0145	0.0203	0.01	ND (0.0069)	0.0043 J	0.00561 J
Benzo(a)pyrene	1.6	11	5.7	5.7	0.0082	0.031	0.0135	0.0182	0.0321	0.0147	0.00368 J	0.00739	0.00853
Benzo(b)fluoranthene	--	110	5.4	75	0.0131	0.0415	0.0182	0.0337	0.0437	0.0194	0.00628 J	0.0112	0.0132
Benzo(g,h,i)perylene	--	--	27	27	0.00729	0.0245	0.0148	0.0364	0.0438	0.0158	0.00536 J	0.0122	0.00981
Benzo(k)fluoranthene	--	910	4.8	39	0.00382 J	0.0139	0.00578 J	0.00756	0.0121	0.00565 J	ND (0.0069)	ND (0.0064)	0.00363 J
Chrysene	2.8	9100	2.2	10	0.00675	0.0299	0.0132	0.0189	0.0236	0.0126	ND (0.0069)	0.00465 J	0.00769
Dibenz(a,h)anthracene	0.26	11	29	390	ND (0.0061)	0.00489 J	0.00311 J	0.0127	0.0093	0.00325 J	ND (0.0069)	0.00247 J	0.00191 J
Fluoranthene	5.1	6700	86	86	0.0185	0.0378	0.0175	0.02	0.0332	0.0178	0.00689 J	0.0114	0.0127
Fluorene	0.54	6700	6	6	ND (0.0061)	ND (0.00633)	ND (0.00621)	ND (0.00668)	ND (0.00632)	ND (0.00629)	ND (0.0069)	ND (0.0064)	ND (0.00637)
Indeno(1,2,3-cd)pyrene	--	110	16	32	0.00536 J	0.0219	0.0106	0.0145	0.0284	0.0101	0.00346 J	0.00702	0.00748
1-Methylnaphthalene	--	--	--	--	0.012 J	ND (0.0211)	ND (0.0207)	ND (0.0223)	0.0048 J	ND (0.021)	ND (0.023)	ND (0.0213)	0.00569 J
2-Methylnaphthalene	0.67	670	0.88	0.88	0.0181 J	ND (0.0211)	ND (0.0207)	ND (0.0223)	0.00684 J	ND (0.021)	ND (0.023)	ND (0.0213)	0.00541 J
Naphthalene	2.1	400	0.042	1.2	0.00805 J	0.00432 J	ND (0.0134)	0.00501 J	0.00655 J	ND (0.0137 J3)	ND (0.0163 J3)	ND (0.0142 J3)	0.00464 J
Phenanthrene	1.5	--	11	11	0.0106	0.017	0.00983	0.0149	0.0142	0.00961	0.00418 J	0.0084	0.0137
Phenol	--	98000	0.16	18	ND (0.338)	ND (0.703)	ND (0.345)	ND (3.71)	ND (3.51)	ND (0.698)	0.0674 J	0.0323 J	ND (0.354)
bis(2-Ethylhexyl)phthalate	--	950	190	640	0.0768 J	ND (0.703)	ND (0.345)	ND (3.71)	ND (3.51)	ND (0.698)	0.16 J	0.156 J	0.07 J
Butylbenzylphthalate	--	--	--	--	ND (0.338)	ND (0.703)	ND (0.345)	ND (3.71)	ND (3.51)	ND (0.698)	ND (0.766)	0.0372 J	ND (0.354)
Di-n-butylphthalate	--	--	--	--	0.0397 J	ND (0.703)	ND (0.345)	ND (3.71)	ND (3.51)	ND (0.698)	0.0367 J	ND (0.71)	0.0221 J
Di-n-octylphthalate	--	--	--	--	ND (0.338)	ND (0.703)	ND (0.345)	ND (3.71)	ND (3.51)	ND (0.698)	ND (0.766)	ND (0.71)	ND (0.354)
Pyrene	2.6	5000	45	45	0.0282	0.0515	0.0229	0.0235	0.0413	0.0264	0.0107	0.018	0.0202
Pesticides													
Aldrin	--	1	8.4	8.4	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)
Chlordane (total)	0.0048	14	23	23	ND (0.305)	ND (0.317)	ND (0.31)	ND (0.334)	ND (0.316)	ND (0.314)	ND (0.345)	ND (0.32)	ND (0.319)
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)
4,4'-DDE	--	57	29	29	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)
4,4'-DDT	--	57	5.6	5.6	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)
Dieldrin	0.0043	1.1	0.00046	0.0063	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)
Endosulfan II	--	--	--	--	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)
Endrin	--	74	0.0076	0.0076	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)
Heptachlor epoxide	--	1.9	0.00018	0.006	ND (0.0203)	ND (0.0211)	ND (0.0207)	ND (0.0223)	ND (0.0211)	ND (0.021)	ND (0.023)	ND (0.0213)	ND (0.0212)

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	A WEST 5B A WEST 5B BENCH -- 8/4/2021	B EAST 5B B EAST 5B BENCH -- 8/4/2021	B EAST 6B B EAST 6B BENCH -- 8/4/2021	B EAST 7B B EAST 7B BENCH -- 8/4/2021	B EAST 8B B EAST 8B BENCH -- 8/4/2021	B WEST 6B B WEST 6B-BENCH -- 8/4/2021	B WEST 6T B WEST 6T-BENCH -- 8/4/2021	B WEST 7T B WEST 7T BENCH -- 8/4/2021	B WEST 8T B WEST 8T BENCH -- 8/4/2021
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	43.2	19.8	30.9 J	72.7 J	35.3 J	26 J	25.2 J	32.6 J	413
Gasoline Range Organics	--	1800	1100	4900	ND (0.102)	ND (0.106)	ND (0.103)	ND (0.111)	ND (0.105)	ND (0.105)	ND (0.115)	ND (0.107)	ND (0.106)
Motor Oil	--	54000	--	--	192	71.6	155	544	206	215	146	157	208
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	ND (0.0173)	ND (0.0179)	ND (0.0176)	ND (0.0189)	ND (0.0179)	ND (0.0178)	ND (0.0196)	ND (0.0181)	ND (0.0181)
Aroclor-1260	--	--	--	--	0.604 P	1.67 P	0.316 P	0.99 P	0.937 P	0.212 P	0.411 P	0.239 P	0.246 P
PCBs (total)	0.18	5.5	330	330	0.604 P	1.67 P	0.316 P	0.99 P	0.937 P	0.212 P	0.411 P	0.239 P	0.246 P
Metals													
Antimony	--	50	--	--	ND (2.03)	ND (2.11)	ND (2.07 J6)	18.8	0.681 J	ND (2.1)	ND (2.3)	ND (2.13)	ND (2.12)
Arsenic	0.07	0.98	--	--	15.6	7.56	3.72	13.4	5.29	4.65	5.18	7.8	4.69
Barium	--	3000	--	--	238	223	177 O1	1290	303	196	199	255	264
Beryllium	--	27	--	--	0.288	0.365	0.116 J	0.296	0.281	0.241	0.284	0.41	0.176 J
Cadmium	0.0096	51	--	--	3.25	5.94	2.84 O1	5.91	2.42	2.91	2.78	3.06	3.06
Chromium (total)	0.37	--	--	--	60.5	72	45.3 O1	67.5	76.9	53.3	168	61.1	55.5
Chromium VI	--	2.8	--	--	ND (2.03)	ND (2.11)	ND (2.07 J3; J6; O1)	ND (2.23)	ND (2.11)	ND (2.1 J3; J6)	ND (2.3)	ND (2.13)	ND (2.12)
Cobalt	--	28	--	--	13.9	13.3	13.9	15.8	16.1	11.7	18	12.1	9.34
Copper	0.27	14000	--	--	85.3	86.3	59.5	257	82.5	67.9	70.5	80.7	83.1
Cyanide (total)	--	22	0.0034	0.0034	**0.252 J**	**0.579**	ND (0.259)	**0.307 J5**	**0.107 J**	**0.244 J**	**0.233 J**	**0.147 J**	**0.212 J**
Lead	0.218	160	--	--	137	137	75.3	1780	257	87.1	124	332	142
Mercury	0.0007	44	--	--	0.388	0.681	0.189	0.3	0.225	0.246	0.259	0.298	0.187
Molybdenum	--	1800	--	--	0.694	1.19	0.318 J	2.52	0.963	0.954	1.02	0.801	1.46
Nickel	0.12	86	--	--	67.4	81.2	64.5	74.5	107	73.6	165	79	68.7
Perchlorate	--	250	--	--	ND (0.0406)	0.026 J	0.031 J	ND (0.0422)	ND (0.0421)	0.0138 J; P1	0.0357 J	ND (0.0427)	ND (0.0425)
Selenium	--	1700	--	--	2.6	2.36	1.52 J	ND (2.23)	1.23 J	1.36 J	1.72 J	1.65 J	1.25 J
Silver	0.0037	1800	--	--	1.76	0.478 J	0.158 J	1.16	0.328 J	0.212 J	0.319 J	0.291 J	0.396 J
Thallium	--	3.5	--	--	ND (2.03)	ND (2.11)	ND (2.07)	ND (2.23)	ND (2.11)	ND (2.1)	ND (2.3)	ND (2.13)	ND (2.12)
Vanadium	--	470	--	--	57.7	57	53.8 O1	63.7	73.6	67.5	71.4	58.7	48.3
Zinc	0.41	110000	--	--	172	199	133 J6; O1	587	289	221	186	164	182

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	C EAST 10B C EAST 10B BENCH -- 8/4/2021	C EAST 11T C EAST 11T BENCH -- 8/4/2021	C EAST 12T C EAST 12T BENCH -- 8/4/2021	C EAST 9B C EAST 9B BENCH -- 8/4/2021	C WEST 10T C WEST 10T BENCH -- 8/4/2021	C WEST 11T C WEST 11T BENCH -- 8/4/2021	C WEST 12T C WEST 12T BENCH -- 8/4/2021	C WEST 9T C WEST 9T BENCH -- 8/4/2021	SB-01 SB-01A-SB-01D -- 2/7/2017
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	0.066 J4	ND (0.0568 J4)	ND (0.0592 J4)	ND (0.057 J4)	ND (0.0573 J4)	ND (0.0551 J4)	ND (0.0565 J4)	0.0444 J; J4	NA
Benzene	--	33	0.025	0.025	ND (0.0011)	ND (0.00114)	ND (0.00118)	ND (0.00114)	ND (0.00115)	ND (0.0011)	ND (0.00113)	0.000647 J	NA
2-Butanone	--	120000	6.1	15	0.0712 J	ND (0.114)	ND (0.118)	0.0819 J	ND (0.115)	ND (0.11)	0.0938 J	0.0822 B ; J	NA
Chloroform	--	34	0.023	0.023	ND (0.00276)	ND (0.00284)	ND (0.00296)	ND (0.00285)	ND (0.00287)	ND (0.00275)	ND (0.00283)	ND (0.00281)	NA
Cumene	--	--	--	--	ND (0.00276)	ND (0.00284)	ND (0.00296)	ND (0.00285)	ND (0.00287)	ND (0.00275)	ND (0.00283)	ND (0.00281)	NA
p-Cymene	--	--	--	--	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	ND (0.00562)	NA
1,2-Dichlorobenzene	--	7800	1	1	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	ND (0.00562)	NA
1,4-Dichlorobenzene	--	280	0.2	0.2	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	ND (0.00562)	NA
1,2-Dichloroethane	--	45	0.007	0.031	ND (0.00276)	ND (0.00284)	ND (0.00296)	ND (0.00285)	ND (0.00287)	ND (0.00275)	ND (0.00283)	ND (0.00281)	NA
Ethyl Benzene	--	540	0.43	0.43	ND (0.00276)	ND (0.00284)	ND (0.00296)	ND (0.00285)	ND (0.00287)	ND (0.00275)	ND (0.00283)	0.00141 J	NA
Methyl tert-butyl ether	--	4100	0.028	2.5	ND (0.0011)	ND (0.00114)	ND (0.00118)	ND (0.00114)	ND (0.00115)	ND (0.0011)	ND (0.00113)	ND (0.00112)	NA
Methylene Chloride	--	490	0.12	0.19	ND (0.0276)	ND (0.0284)	ND (0.0296)	ND (0.0285)	ND (0.0287)	ND (0.0275)	ND (0.0283)	ND (0.0281)	NA
Propylbenzene	--	--	--	--	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	ND (0.00562)	NA
Tetrachloroethene	--	33	0.08	0.08	ND (0.00276)	ND (0.00284)	ND (0.00296)	ND (0.00285)	ND (0.00287)	ND (0.00275)	ND (0.00283)	ND (0.00281)	NA
Toluene	--	4700	3.2	10	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	0.00465 J	NA
1,2,3-Trimethylbenzene	--	--	--	--	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	ND (0.00562)	NA
1,2,4-Trimethylbenzene	--	--	--	--	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	ND (0.00562)	NA
1,3,5-Trimethylbenzene	--	--	--	--	ND (0.00552)	ND (0.00568)	ND (0.00592)	ND (0.0057)	ND (0.00573)	ND (0.00551)	ND (0.00565)	ND (0.00562)	NA
Xylenes (total)	--	2400	2.1	10	ND (0.00718)	ND (0.00738)	ND (0.00769)	ND (0.00741)	ND (0.00745)	ND (0.00716)	ND (0.00735)	0.00507 J	NA
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	0.0165	ND (0.00641)	0.00282 J	ND (0.00642)	ND (0.00644)	ND (0.0063)	0.00231 J	ND (0.00637)	NA
Acenaphthylene	0.64	--	6.4	6.4	0.00229 J	0.00536 J	0.00633 J	0.00728	0.00297 J	0.014	0.0119	0.00841	NA
Anthracene	1.1	50000	1.9	1.9	0.0294	0.00364 J	0.0103	0.00615 J	ND (0.00644)	0.00527 J	0.0111	0.00398 J	NA
Benzo(a)anthracene	1.6	110	10	10	0.089	0.022	0.0382	0.0339	0.00995	0.0182	0.0366	0.014	NA
Benzo(a)pyrene	1.6	11	5.7	5.7	0.0916	0.0287	0.0467	0.043	0.0163	0.0293	0.0385	0.0151	NA
Benzo(b)fluoranthene	--	110	5.4	75	0.12	0.0411	0.0567	0.0569	0.0271	0.041	0.0468	0.0219	NA
Benzo(g,h,i)perylene	--	--	27	27	0.0805	0.0316	0.058	0.0507	0.026	0.0289	0.0304	0.0139	NA
Benzo(k)fluoranthene	--	910	4.8	39	0.041	0.0129	0.0176	0.0178	0.00569 J	0.00834	0.0145	0.00645	NA
Chrysene	2.8	9100	2.2	10	0.0844	0.0255	0.0358	0.037	0.0105	0.0228	0.0404	0.0155	NA
Dibenz(a,h)anthracene	0.26	11	29	390	0.0158	0.00581 J	0.00763	0.00919	0.00569 J	0.00668	0.00728	0.00272 J	NA
Fluoranthene	5.1	6700	86	86	0.218	0.0384	0.0914	0.0641	0.0186	0.0382	0.0623	0.042	NA
Fluorene	0.54	6700	6	6	0.018	ND (0.00641)	0.0032 J	0.00376 J	ND (0.00644)	0.00295 J	0.00954	0.00491 J	NA
Indeno(1,2,3-cd)pyrene	--	110	16	32	0.0734	0.0258	0.0404	0.0371	0.0146	0.0225	0.0239	0.00948	NA
1-Methylnaphthalene	--	--	--	--	ND (0.021)	ND (0.0214)	ND (0.0218)	0.00571 J	ND (0.0215)	ND (0.021)	0.0086 J	0.00736 J	NA
2-Methylnaphthalene	0.67	670	0.88	0.88	0.00563 J	0.00506 J	ND (0.0218)	0.00668 J	ND (0.0215)	0.00472 J	0.0101 J	0.00673 J	NA
Naphthalene	2.1	400	0.042	1.2	0.00594 J	0.00837 J	0.00483 J	0.00724 J	ND (0.0143 J3)	0.00559 J	0.00992 J	0.0092 J	NA
Phenanthrene	1.5	--	11	11	0.141	0.0193	0.0547	0.0379	0.0123	0.0249	0.0746	0.0342	NA
Phenol	--	98000	0.16	18	ND (3.5)	ND (0.711)	ND (3.64)	ND (3.56)	ND (0.357)	ND (0.7)	ND (0.709)	ND (0.708)	NA
bis(2-Ethylhexyl)phthalate	--	950	190	640	ND (3.5)	ND (0.711)	ND (3.64)	ND (3.56)	0.0711 J	ND (0.7)	0.326 J	0.372 J	NA
Butylbenzylphthalate	--	--	--	--	ND (3.5)	ND (0.711)	ND (3.64)	ND (3.56)	ND (0.357)	ND (0.7)	ND (0.709)	ND (0.708)	NA
Di-n-butylphthalate	--	--	--	--	ND (3.5)	ND (0.711)	ND (3.64)	ND (3.56)	0.0194 J	ND (0.7)	ND (0.709)	ND (0.708)	NA
Di-n-octylphthalate	--	--	--	--	ND (3.5)	ND (0.711)	ND (3.64)	ND (3.56)	ND (0.357)	ND (0.7)	ND (0.709)	ND (0.708)	NA
Pyrene	2.6	5000	45	45	0.177	0.0413	0.0904	0.0754	0.0256	0.0753	0.0833	0.0575	NA
Pesticides													
Aldrin	--	1	8.4	8.4	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA
Chlordane (total)	0.0048	14	23	23	ND (0.316)	ND (0.32)	ND (0.328)	ND (0.321)	ND (0.322)	ND (0.315)	ND (0.32)	ND (0.319)	NA
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA
4,4'-DDE	--	57	29	29	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA
4,4'-DDT	--	57	5.6	5.6	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA
Dieldrin	0.0043	1.1	0.00046	0.0063	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA
Endosulfan II	--	--	--	--	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA
Endrin	--	74	0.0076	0.0076	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA
Heptachlor epoxide	--	1.9	0.00018	0.006	ND (0.021)	ND (0.0214)	ND (0.0218)	ND (0.0214)	ND (0.0215)	ND (0.021)	ND (0.0213)	ND (0.0212)	NA

Attachment A
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Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

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Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	36 J	13.1 J	18 J	49.4	53.3	23.2 J	29.4 J	48.2	NA
Gasoline Range Organics	--	1800	1100	4900	ND (0.105)	ND (0.107)	ND (0.109)	ND (0.107)	ND (0.107)	ND (0.105)	ND (0.107)	ND (0.106)	NA
Motor Oil	--	54000	--	--	190	89.3	110	201	185	164	181	164	NA
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	ND (0.0179)	ND (0.0182)	ND (0.0186)	ND (0.0182)	ND (0.0182)	ND (0.0179)	ND (0.0181)	ND (0.0181)	NA
Aroclor-1260	--	--	--	--	0.18	0.357	0.0862 P	0.212 P	0.514 P	0.313 P	0.243 P	0.476	NA
PCBs (total)	0.18	5.5	330	330	0.18	0.357	0.0862 P	0.212 P	0.514 P	0.313 P	0.243 P	0.476	NA
Metals													
Antimony	--	50	--	--	ND (2.1)	ND (2.14)	6.56 J6	ND (2.14)	3.08	ND (2.1)	ND (2.13)	ND (2.12)	NA
Arsenic	0.07	0.98	--	--	4.66	5.45	5.54	5.88	7.36	5.98	5.36	5.73	4.1
Barium	--	3000	--	--	226	278	212 O1	250	389	295	236	228	250
Beryllium	--	27	--	--	0.179 J	0.162 J	0.064 J	0.263	0.254	0.314	0.217	0.275	NA
Cadmium	0.0096	51	--	--	1.84	9.98	5.22 O1	2.34	12.4	2.82	7	4.43	9
Chromium (total)	0.37	--	--	--	63.5	62	56.8 O1	63.6	88.4	67.4	54	69.2	97
Chromium VI	--	2.8	--	--	ND (2.1)	ND (2.14)	ND (2.18)	ND (2.14)	ND (2.15)	ND (2.1)	ND (2.13)	ND (2.12)	NA
Cobalt	--	28	--	--	13.2	11.5	21 J5	14	14.1	12.6	14.7	11.8	10
Copper	0.27	14000	--	--	57	96.2	340 J3; J5; J6; O1	225	294	167	137	91.6	160
Cyanide (total)	--	22	0.0034	0.0034	**0.1 J**	**0.192 J**	**0.297**	ND (0.267)	**0.334**	**0.158 J**	**0.25 J**	**0.217 J**	NA
Lead	0.218	160	--	--	106	147	403 J5	151	770	197	498	192	260
Mercury	0.0007	44	--	--	0.162	0.479	0.4 J6; O1	0.278	0.655	0.491	0.329	0.211	0.27
Molybdenum	--	1800	--	--	0.462 J	0.541	0.643	2.93	5.61	1.36	0.737	0.784	1.5
Nickel	0.12	86	--	--	86.8	57.7	69.1 J5	88.1	77.6	72.8	60.1	69.3	52
Perchlorate	--	250	--	--	ND (0.0393)	ND (0.0427)	ND (0.0408)	ND (0.0428)	0.0279 J	0.0152 J	ND (0.0426)	ND (0.0425)	NA
Selenium	--	1700	--	--	0.969 J	0.838 J	1.88 J	1.17 J	1.92 J	0.928 J	1.55 J	2.35	NA
Silver	0.0037	1800	--	--	0.313 J	0.741 J	0.449 J; O1	0.239 J	1.98	0.47 J	0.54 J	0.482 J	1.1
Thallium	--	3.5	--	--	ND (2.1)	ND (2.14)	ND (2.18)	ND (2.14)	ND (2.15)	ND (2.1)	ND (2.13)	ND (2.12)	NA
Vanadium	--	470	--	--	56.7	55.9	78.9 O1	59.4	55.9	53	73.3	54.5	36
Zinc	0.41	110000	--	--	160	218	500 O1;V	187	604	338	302	218	390

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SB-02 SB-02A-SB02D -- 2/7/2017	SB-03 SB-03A-SB-03B -- 2/7/2017	SB-04 SB-04A-SB-04D -- 2/8/2017	SB-05 SB-05A-SB-05C -- 2/8/2017	SB-06 SB-06A-SB-06C -- 2/8/2017	SEC A EAST 1 SEC A EAST 1 BOTTOM -- 5/5/2021	SEC A EAST 1 SEC A EAST 1 TOP 3.0 - 4.0 5/5/2021	SEC A EAST 2 SEC A EAST 2 BOTTOM -- 5/5/2021	SEC A EAST 2 SEC A EAST 2 TOP 3.0 - 4.0 5/5/2021
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	NA	NA	NA	NA	NA	0.121	ND (0.0663)	0.215	0.0699
Benzene	--	33	0.025	0.025	NA	NA	NA	NA	NA	ND (0.00127)	ND (0.00133)	ND (0.00132)	ND (0.00123)
2-Butanone	--	120000	6.1	15	NA	NA	NA	NA	NA	ND (0.127)	ND (0.133)	ND (0.132)	ND (0.123)
Chloroform	--	34	0.023	0.023	NA	NA	NA	NA	NA	ND (0.00317)	ND (0.00331)	ND (0.00331)	ND (0.00308)
Cumene	--	--	--	--	NA	NA	NA	NA	NA	ND (0.00317)	ND (0.00331)	0.00123 J	ND (0.00308)
p-Cymene	--	--	--	--	NA	NA	NA	NA	NA	ND (0.00634)	ND (0.00663)	0.00817	ND (0.00616)
1,2-Dichlorobenzene	--	7800	1	1	NA	NA	NA	NA	NA	ND (0.00634)	ND (0.00663)	0.00874	ND (0.00616)
1,4-Dichlorobenzene	--	280	0.2	0.2	NA	NA	NA	NA	NA	ND (0.00634)	ND (0.00663)	0.0108	ND (0.00616)
1,2-Dichloroethane	--	45	0.007	0.031	NA	NA	NA	NA	NA	ND (0.00317)	ND (0.00331)	ND (0.00331)	ND (0.00308)
Ethyl Benzene	--	540	0.43	0.43	NA	NA	NA	NA	NA	ND (0.00317)	ND (0.00331)	0.00106 B ; J	ND (0.00308)
Methyl tert-butyl ether	--	4100	0.028	2.5	NA	NA	NA	NA	NA	ND (0.00127)	ND (0.00133)	ND (0.00132)	ND (0.00123)
Methylene Chloride	--	490	0.12	0.19	NA	NA	NA	NA	NA	ND (0.0317)	ND (0.0331)	ND (0.0331)	ND (0.0308)
Propylbenzene	--	--	--	--	NA	NA	NA	NA	NA	ND (0.00634)	0.00137 J	0.00245 J	0.00127 J
Tetrachloroethene	--	33	0.08	0.08	NA	NA	NA	NA	NA	ND (0.00317)	0.00431	ND (0.00331)	ND (0.00308)
Toluene	--	4700	3.2	10	NA	NA	NA	NA	NA	ND (0.00634)	0.00261 J	ND (0.00662)	ND (0.00616)
1,2,3-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA	NA	ND (0.00634)	ND (0.00663)	0.00633 J	0.00296 J
1,2,4-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA	NA	0.00349 J	ND (0.00663)	0.0107 B	0.00238 B ; J
1,3,5-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA	NA	ND (0.00634)	ND (0.00663)	0.00382 J	ND (0.00616)
Xylenes (total)	--	2400	2.1	10	NA	NA	NA	NA	NA	ND (0.00825)	0.00574 J	0.0049 B ; J	0.00169 B ; J
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	NA	NA	NA	NA	NA	ND (0.068)	ND (0.00698)	ND (0.00697)	ND (0.067)
Acenaphthylene	0.64	--	6.4	6.4	NA	NA	NA	NA	NA	ND (0.068)	ND (0.00698)	ND (0.00697)	ND (0.067)
Anthracene	1.1	50000	1.9	1.9	NA	NA	NA	NA	NA	ND (0.068)	ND (0.00698)	0.00303 J	ND (0.067)
Benzo(a)anthracene	1.6	110	10	10	NA	NA	NA	NA	NA	0.0311 J	0.00572 J	0.0216	0.039 J
Benzo(a)pyrene	1.6	11	5.7	5.7	NA	NA	NA	NA	NA	0.0273 J	0.00702	0.0224	0.0866
Benzo(b)fluoranthene	--	110	5.4	75	NA	NA	NA	NA	NA	0.0407 J	0.00914	0.0294	0.128
Benzo(g,h,i)perylene	--	--	27	27	NA	NA	NA	NA	NA	0.0485 J	0.00917	0.0177	0.176
Benzo(k)fluoranthene	--	910	4.8	39	NA	NA	NA	NA	NA	ND (0.068)	0.0028 J	0.00761	0.0281 J
Chrysene	2.8	9100	2.2	10	NA	NA	NA	NA	NA	0.0328 J	0.00671 J	0.0253	0.041 J
Dibenz(a,h)anthracene	0.26	11	29	390	NA	NA	NA	NA	NA	ND (0.068)	0.00206 J	0.00488 J	0.0558 J
Fluoranthene	5.1	6700	86	86	NA	NA	NA	NA	NA	0.0751	0.00698 J	0.0213	0.0793
Fluorene	0.54	6700	6	6	NA	NA	NA	NA	NA	ND (0.068)	ND (0.00698)	ND (0.00697)	ND (0.067)
Indeno(1,2,3-cd)pyrene	--	110	16	32	NA	NA	NA	NA	NA	0.0276 J	0.00579 J	0.0117	0.0892
1-Methylnaphthalene	--	--	--	--	NA	NA	NA	NA	NA	ND (0.227)	ND (0.0233)	ND (0.0232)	ND (0.223)
2-Methylnaphthalene	0.67	670	0.88	0.88	NA	NA	NA	NA	NA	ND (0.227)	0.00506 J	ND (0.0232)	ND (0.223)
Naphthalene	2.1	400	0.042	1.2	NA	NA	NA	NA	NA	ND (0.0159)	0.0122 J	0.0112 J	ND (0.0154 J3)
Phenanthrene	1.5	--	11	11	NA	NA	NA	NA	NA	0.089	0.00688 J	0.0135	0.0873
Phenol	--	98000	0.16	18	NA	NA	NA	NA	NA	ND (3.78)	0.0237 J	ND (3.87)	ND (3.72)
bis(2-Ethylhexyl)phthalate	--	950	190	640	NA	NA	NA	NA	NA	ND (3.78)	ND (0.387)	ND (3.87)	17.4
Butylbenzylphthalate	--	--	--	--	NA	NA	NA	NA	NA	ND (3.78)	ND (0.387)	ND (3.87)	ND (3.72)
Di-n-butylphthalate	--	--	--	--	NA	NA	NA	NA	NA	ND (3.78)	ND (0.387)	ND (3.87)	ND (3.72)
Di-n-octylphthalate	--	--	--	--	NA	NA	NA	NA	NA	ND (3.78)	ND (0.387)	ND (3.87)	ND (3.72)
Pyrene	2.6	5000	45	45	NA	NA	NA	NA	NA	0.0834	0.0113	0.0409	0.0839
Pesticides													
Aldrin	--	1	8.4	8.4	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)
Chlordane (total)	0.0048	14	23	23	NA	NA	NA	NA	NA	ND (0.34)	ND (0.349)	ND (0.349)	ND (0.335)
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)
4,4'-DDE	--	57	29	29	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)
4,4'-DDT	--	57	5.6	5.6	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)
Dieldrin	0.0043	1.1	0.00046	0.0063	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)
Endosulfan II	--	--	--	--	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)
Endrin	--	74	0.0076	0.0076	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)
Heptachlor epoxide	--	1.9	0.00018	0.006	NA	NA	NA	NA	NA	ND (0.0227)	ND (0.0233)	ND (0.0232)	ND (0.0223)

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Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SB-02 SB-02A-SB02D -- 2/7/2017	SB-03 SB-03A-SB-03B -- 2/7/2017	SB-04 SB-04A-SB-04D -- 2/8/2017	SB-05 SB-05A-SB-05C -- 2/8/2017	SB-06 SB-06A-SB-06C -- 2/8/2017	SEC A EAST 1 SEC A EAST 1 BOTTOM -- 5/5/2021	SEC A EAST 1 SEC A EAST 1 TOP 3.0 - 4.0 5/5/2021	SEC A EAST 2 SEC A EAST 2 BOTTOM -- 5/5/2021	SEC A EAST 2 SEC A EAST 2 TOP 3.0 - 4.0 5/5/2021
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	NA	NA	NA	NA	NA	422 J;V	10.9	195 J	217 J
Gasoline Range Organics	--	1800	1100	4900	NA	NA	NA	NA	NA	0.144	ND (0.116)	0.184	ND (0.112)
Motor Oil	--	54000	--	--	NA	NA	NA	NA	NA	1100	44.2	703	1100
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	NA	NA	NA	NA	NA	ND (0.0193)	ND (0.0198)	ND (0.0198)	ND (0.019)
Aroclor-1260	--	--	--	--	NA	NA	NA	NA	NA	ND (0.0193)	0.0873	6.69	3.06
PCBs (total)	0.18	5.5	330	330	NA	NA	NA	NA	NA	ND (0.0386)	0.0873	6.69	3.06
Metals													
Antimony	--	50	--	--	NA	NA	NA	NA	NA	4.98	1.52 J	ND (2.32)	6.64
Arsenic	0.07	0.98	--	--	3	11	NA	3.9	NA	8.04	9.43	5.51	11
Barium	--	3000	--	--	290	290	160	140	170	241	266	574	514
Beryllium	--	27	--	--	NA	NA	NA	NA	NA	0.27	0.464	0.277	0.323
Cadmium	0.0096	51	--	--	5.6	7.6	1.9	2.6	2.1	2.22	2.98	6.9	21
Chromium (total)	0.37	--	--	--	59	63	45	46	49	39.7	63.4	71.8	107
Chromium VI	--	2.8	--	--	NA	NA	NA	NA	NA	ND (2.27)	ND (2.33)	ND (2.32)	ND (2.23)
Cobalt	--	28	--	--	9.5	8.9	9.1	8.6	9.1	14.2	15.6	16.6	13.6
Copper	0.27	14000	--	--	130	140	36	60	50	300	103	121	462
Cyanide (total)	--	22	0.0034	0.0034	NA	NA	NA	NA	NA	**0.161 J**	**0.185 J**	**0.341**	**0.603**
Lead	0.218	160	--	--	1200	310	45	90	79	274	175	206	1200
Mercury	0.0007	44	--	--	0.18	0.44	0.1	0.23	0.12	0.29	0.142	0.315	0.849
Molybdenum	--	1800	--	--	0.91	4.7	NA	NA	NA	0.513 J	0.989	1.54	5.67
Nickel	0.12	86	--	--	47	39	50	54	59	46.6	73.3	63.3	79.1
Perchlorate	--	250	--	--	NA	NA	NA	NA	NA	ND (0.0454)	ND (0.0465)	0.0339 J	ND (0.0447)
Selenium	--	1700	--	--	NA	NA	NA	NA	NA	ND (2.27)	ND (2.33)	ND (2.32)	ND (2.23)
Silver	0.0037	1800	--	--	0.83	1.2	NA	0.51	0.52	0.327 J	0.414 J	1.62	2.01
Thallium	--	3.5	--	--	NA	NA	1.7	NA	NA	ND (2.27)	ND (2.33)	ND (2.32)	ND (2.23)
Vanadium	--	470	--	--	34	42	31	30	33	50.3	51.2	75.7	52.4
Zinc	0.41	110000	--	--	410	400	79	160	140	331	324	289	1200

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC A EAST 3 SEC A EAST 3 BOTTOM -- 5/5/2021	SEC A EAST 3 SEC A EAST 3 TOP 3.0 - 4.0 5/5/2021	SEC A EAST 4 SEC A EAST 4 BOTTOM -- 5/5/2021	SEC A EAST 4 SEC A EAST 4 TOP -- 5/5/2021	SEC A WEST 1 SEC A WEST 1 BOTTOM -- 5/3/2021	SEC A WEST 1 SEC A WEST 1 TOP 3.0 - 4.0 5/3/2021	SEC A WEST 2 SEC A WEST 2 BOTTOM -- 5/3/2021	SEC A WEST 2 SEC A WEST 2 TOP 3.0 - 4.0 5/3/2021	SEC A WEST 3 SEC A WEST 3 BOTTOM -- 5/3/2021
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	ND (0.0703)	ND (0.0548)	ND (0.0696)	ND (0.0678)	ND (0.103)	ND (0.0581)	ND (0.0695)	ND (0.0668)	ND (0.0721)
Benzene	--	33	0.025	0.025	ND (0.00141)	ND (0.0011)	ND (0.00139)	ND (0.00136)	ND (0.00206)	ND (0.00116)	ND (0.00139)	ND (0.00134)	ND (0.00144)
2-Butanone	--	120000	6.1	15	ND (0.141)	ND (0.11)	0.133 B ; J	ND (0.136)	ND (0.206)	ND (0.116)	ND (0.139)	ND (0.134)	ND (0.144)
Chloroform	--	34	0.023	0.023	ND (0.00351)	ND (0.00274)	ND (0.00348)	ND (0.00339)	ND (0.00516)	ND (0.00291)	ND (0.00348)	ND (0.00334)	ND (0.0036)
Cumene	--	--	--	--	ND (0.00351)	ND (0.00274)	ND (0.00348)	ND (0.00339)	ND (0.00516)	ND (0.00291)	ND (0.00348)	ND (0.00334)	ND (0.0036)
p-Cymene	--	--	--	--	ND (0.00703)	ND (0.00548)	ND (0.00696)	ND (0.00678)	ND (0.0103)	ND (0.00581)	ND (0.00695)	0.0227	0.0209
1,2-Dichlorobenzene	--	7800	1	1	ND (0.00703)	ND (0.00548)	ND (0.00696)	ND (0.00678)	ND (0.0103)	ND (0.00581)	ND (0.00695)	ND (0.00668)	ND (0.00721)
1,4-Dichlorobenzene	--	280	0.2	0.2	ND (0.00703)	ND (0.00548)	ND (0.00696)	ND (0.00678)	ND (0.0103)	ND (0.00581)	ND (0.00695)	ND (0.00668)	ND (0.00721)
1,2-Dichloroethane	--	45	0.007	0.031	ND (0.00351)	ND (0.00274)	ND (0.00348)	ND (0.00339)	ND (0.00516)	ND (0.00291)	ND (0.00348)	ND (0.00334)	ND (0.0036)
Ethyl Benzene	--	540	0.43	0.43	ND (0.00351)	ND (0.00274)	ND (0.00348)	ND (0.00339)	ND (0.00516)	ND (0.00291)	ND (0.00348)	ND (0.00334)	0.00422
Methyl tert-butyl ether	--	4100	0.028	2.5	ND (0.00141)	ND (0.0011)	ND (0.00139)	ND (0.00136)	ND (0.00206)	ND (0.00116)	ND (0.00139)	ND (0.00134)	ND (0.00144)
Methylene Chloride	--	490	0.12	0.19	ND (0.0351)	ND (0.0274)	ND (0.0348)	ND (0.0339)	ND (0.0516)	ND (0.0291)	ND (0.0348)	ND (0.0334)	ND (0.036)
Propylbenzene	--	--	--	--	ND (0.00703)	ND (0.00548)	ND (0.00696)	ND (0.00678)	ND (0.0103)	ND (0.00581)	ND (0.00695)	ND (0.00668)	ND (0.00721)
Tetrachloroethene	--	33	0.08	0.08	ND (0.00351)	ND (0.00274)	ND (0.00348)	ND (0.00339)	ND (0.00516)	ND (0.00291)	ND (0.00348)	ND (0.00334)	ND (0.0036)
Toluene	--	4700	3.2	10	ND (0.00703)	ND (0.00548)	ND (0.00696)	ND (0.00678)	0.00382 J	ND (0.00581)	0.0022 J	0.00347 J	ND (0.00721)
1,2,3-Trimethylbenzene	--	--	--	--	ND (0.00703)	ND (0.00548)	ND (0.00696 J4)	ND (0.00678 J4)	ND (0.0103)	ND (0.00581)	ND (0.00695)	ND (0.00668)	ND (0.00721)
1,2,4-Trimethylbenzene	--	--	--	--	ND (0.00703)	ND (0.00548)	ND (0.00696)	ND (0.00678)	ND (0.0103)	ND (0.00581)	ND (0.00695)	ND (0.00668)	ND (0.00721)
1,3,5-Trimethylbenzene	--	--	--	--	ND (0.00703)	ND (0.00548)	ND (0.00696)	ND (0.00678)	ND (0.0103)	ND (0.00581)	ND (0.00695)	ND (0.00668)	ND (0.00721)
Xylenes (total)	--	2400	2.1	10	ND (0.00913)	ND (0.00712)	ND (0.00905)	ND (0.00882)	0.00191 J	0.00127 J	0.00157 J	0.00207 J	0.0273
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	ND (0.0721)	ND (0.00628)	ND (0.00718)	ND (0.00707)	ND (0.0092)	ND (0.00649)	0.00544 J	0.00531 J	0.00476 J
Acenaphthylene	0.64	--	6.4	6.4	ND (0.0721)	ND (0.00628)	0.00549 J	ND (0.00707)	ND (0.0092)	ND (0.00649)	ND (0.00717)	0.0026 J	ND (0.00732)
Anthracene	1.1	50000	1.9	1.9	0.0315 J	ND (0.00628)	0.00889	ND (0.00707)	ND (0.0092)	ND (0.00649)	0.0122	0.00994	0.00513 J
Benzo(a)anthracene	1.6	110	10	10	0.0481 J	0.0146	0.041	0.00643 J	0.00582 J	0.012	0.0473	0.0697	0.0194
Benzo(a)pyrene	1.6	11	5.7	5.7	0.056 J	0.0176	0.0378	0.00772	0.0074 J	0.0239	0.0444	0.0758	0.0198
Benzo(b)fluoranthene	--	110	5.4	75	0.0849	0.0283	0.0443	0.0115	0.0128	0.0266	0.0584	0.0899	0.0415
Benzo(g,h,i)perylene	--	--	27	27	0.121	0.0189	0.0322	0.011	0.0142	0.0354	0.0395	0.0608	0.0194
Benzo(k)fluoranthene	--	910	4.8	39	ND (0.0721)	0.00811	0.017	0.00388 J	0.00389 J	0.00785	0.019	0.0278	0.00796
Chrysene	2.8	9100	2.2	10	0.0511 J	0.0112	0.0431	0.00683 J	0.00864 J	0.0147	0.0613	0.0967	0.0216
Dibenz(a,h)anthracene	0.26	11	29	390	0.0319 J	0.00404 J	0.00585 J	0.00213 J	ND (0.0092)	0.00584 J	0.00999	0.0111	0.0076
Fluoranthene	5.1	6700	86	86	0.0964	0.0171	0.085	0.0132	0.00904 J	0.0151	0.0891	0.0583	0.033
Fluorene	0.54	6700	6	6	ND (0.0721)	ND (0.00628)	0.0145 J	ND (0.00707)	ND (0.0092)	ND (0.00649)	0.00413 J	0.00363 J	0.00653 J
Indeno(1,2,3-cd)pyrene	--	110	16	32	0.0521 J	0.0117	0.0297	0.00862	0.00601 J	0.0257	0.0287	0.0358	0.014
1-Methylnaphthalene	--	--	--	--	ND (0.24)	ND (0.0209)	0.00549 J	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	0.0183 J	0.0234 J
2-Methylnaphthalene	0.67	670	0.88	0.88	ND (0.24)	ND (0.0209)	0.0072 J	ND (0.0236)	ND (0.0307)	0.00547 J	0.00526 J	0.0336	0.041
Naphthalene	2.1	400	0.042	1.2	ND (0.0176)	0.005 J	0.0116 J	ND (0.017)	0.008 J	0.00518 J	0.00803 J	0.0187 J	0.101
Phenanthrene	1.5	--	11	11	0.0973	0.00823	0.0538	0.00556 J	0.0117	0.00972	0.0754	0.0468	0.0525
Phenol	--	98000	0.16	18	ND (8.01)	0.0225 J	ND (0.797)	ND (0.784)	0.0444 J	ND (3.6)	ND (3.98)	ND (3.89)	ND (4.06)
bis(2-Ethylhexyl)phthalate	--	950	190	640	ND (8.01)	ND (0.349)	ND (0.797)	ND (0.784)	0.138 J	ND (3.6)	ND (3.98)	ND (3.89)	ND (4.06)
Butylbenzylphthalate	--	--	--	--	ND (8.01)	ND (0.349)	ND (0.797)	ND (0.784)	ND (1.02)	ND (3.6)	ND (3.98)	ND (3.89)	ND (4.06)
Di-n-butylphthalate	--	--	--	--	ND (8.01)	ND (0.349)	ND (0.797)	ND (0.784)	ND (1.02)	ND (3.6)	ND (3.98)	ND (3.89)	ND (4.06)
Di-n-octylphthalate	--	--	--	--	ND (8.01)	ND (0.349)	ND (0.797)	ND (0.784)	ND (1.02)	ND (3.6)	ND (3.98)	ND (3.89)	ND (4.06)
Pyrene	2.6	5000	45	45	0.0911	0.026	0.0867	0.0145	0.0107	0.0192	0.137	0.154	0.0684
Pesticides													
Aldrin	--	1	8.4	8.4	ND (0.024)	ND (0.0209)	ND (0.0239)	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	ND (0.0234)	ND (0.0244)
Chlordane (total)	0.0048	14	23	23	ND (0.361)	ND (0.314)	0.618	0.133 J	ND (0.46)	ND (0.324)	ND (0.358)	ND (0.35)	ND (0.366)
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	0.00599 J; P	ND (0.0209)	ND (0.0239)	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	ND (0.0234)	ND (0.0244)
4,4'-DDE	--	57	29	29	0.00785 J; P	ND (0.0209)	ND (0.0239)	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	ND (0.0234)	ND (0.0244)
4,4'-DDT	--	57	5.6	5.6	0.00958 J; P	ND (0.0209)	ND (0.0239)	ND (0.0236)	0.0221 J	0.0135 J	ND (0.0239)	ND (0.0234)	ND (0.0244)
Dieldrin	0.0043	1.1	0.00046	0.0063	ND (0.024)	ND (0.0209)	ND (0.0239)	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	ND (0.0234)	ND (0.0244)
Endosulfan II	--	--	--	--	ND (0.024)	ND (0.0209)	ND (0.0239)	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	ND (0.0234)	ND (0.0244)
Endrin	--	74	0.0076	0.0076	ND (0.024)	ND (0.0209)	ND (0.0239)	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	ND (0.0234)	ND (0.0244)
Heptachlor epoxide	--	1.9	0.00018	0.006	ND (0.024)	ND (0.0209)	ND (0.0239)	ND (0.0236)	ND (0.0307)	ND (0.0216)	ND (0.0239)	ND (0.0234)	ND (0.0244)

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC A EAST 3 SEC A EAST 3 BOTTOM -- 5/5/2021	SEC A EAST 3 SEC A EAST 3 TOP 3.0 - 4.0 5/5/2021	SEC A EAST 4 SEC A EAST 4 BOTTOM -- 5/5/2021	SEC A EAST 4 SEC A EAST 4 TOP -- 5/5/2021	SEC A WEST 1 SEC A WEST 1 BOTTOM -- 5/3/2021	SEC A WEST 1 SEC A WEST 1 TOP 3.0 - 4.0 5/3/2021	SEC A WEST 2 SEC A WEST 2 BOTTOM -- 5/3/2021	SEC A WEST 2 SEC A WEST 2 TOP 3.0 - 4.0 5/3/2021	SEC A WEST 3 SEC A WEST 3 BOTTOM -- 5/3/2021
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	236 J	20.3	14	6.94	45.8 J	30.6 J	34 J	342	78.2
Gasoline Range Organics	--	1800	1100	4900	0.123	ND (0.105)	ND (0.12)	ND (0.118)	0.13 B ; J	0.0491 B ; J	0.0444 B ; J	0.0743 B ; J	0.0526 B ; J
Motor Oil	--	54000	--	--	1370	62.7	53	42.4	207	187	301	944	295
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	ND (0.0204)	ND (0.0178)	ND (0.0203)	ND (0.02)	ND (0.0261)	ND (0.0184)	ND (0.0203)	ND (0.0199)	ND (0.0208)
Aroclor-1260	--	--	--	--	ND (0.0204)	ND (0.0178)	0.415	0.068	0.285	0.135	0.176	0.918	0.3 P
PCBs (total)	0.18	5.5	330	330	ND (0.0409)	#NAME?	0.415	0.068	0.285	0.135	0.176	0.918	0.3 P
Metals													
Antimony	--	50	--	--	ND (2.4)	ND (2.09)	1.03 J	ND (2.36)	1.38 J	5.45	1.48 J	2.23 J	3.04
Arsenic	0.07	0.98	--	--	2.88	4.7	4.63	4.91	6.49	4.4	6.92	10.6	7.12
Barium	--	3000	--	--	115	205	253	230	350	209	242	391	364
Beryllium	--	27	--	--	0.151 J	0.311	0.605	0.551	0.553	0.45	0.437	0.5	0.516
Cadmium	0.0096	51	--	--	0.927	1.14	3.59	1.14	14.6	2.35	1.04	10.2	4.15
Chromium (total)	0.37	--	--	--	39.7	50.9	47.8	62.8	74.4	49.8	64.6	81.1	77.1
Chromium VI	--	2.8	--	--	ND (2.4)	ND (2.09)	ND (2.39)	ND (2.36)	ND (3.07)	ND (2.16)	ND (2.39)	ND (2.34)	ND (2.44)
Cobalt	--	28	--	--	7.84	9.82	20	12.9	18.1	9.74	14.1	15.7	16.2
Copper	0.27	14000	--	--	42	40.4	99.5	45.2	128	78.2	56.4	257	128
Cyanide (total)	--	22	0.0034	0.0034	**0.226 J**	**0.17 J; P1**	**0.251 J**	**0.0878 J; J6**	**0.472**	**0.773 J3; J6**	**0.119 J**	**0.881**	**0.11 J; P1**
Lead	0.218	160	--	--	33.8	52.5	242	53.4	178	350	75.6	696	279
Mercury	0.0007	44	--	--	0.391	0.101	0.247	0.0724	0.785	0.127	0.186	0.605	0.276
Molybdenum	--	1800	--	--	0.16 J	0.634	0.867	0.441 J	1.77	0.853	0.488 J	3.79	1.82
Nickel	0.12	86	--	--	49	60.6	62.9	65.9	79.7	52.3	100	71.7	79
Perchlorate	--	250	--	--	ND (0.0481)	0.024 J	ND (0.0478)	ND (0.0471)	ND (0.0613)	ND (0.0432)	ND (0.0478)	ND (0.0467)	ND (0.0488)
Selenium	--	1700	--	--	1.09 J	ND (2.09)	3.18	2.54	2.61 J	1.24 J	1.97 J	2.06 J	2.04 J
Silver	0.0037	1800	--	--	0.588 J	0.905 J	0.338 J	ND (1.18)	0.71 J	0.357 J	ND (1.19)	1.66	1.02 J
Thallium	--	3.5	--	--	ND (2.4)	ND (2.09)	ND (2.39)	ND (2.36)	ND (3.07)	ND (2.16)	ND (2.39)	ND (2.34)	ND (2.44)
Vanadium	--	470	--	--	39.8	44.8	62.6	55.2	67	46.5	54.6	75.8	64.4
Zinc	0.41	110000	--	--	74.5	115	176	121	377	284	217	608	284

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC A WEST 3 SEC A WEST 3 TOP 3.0 - 4.0 5/3/2021	SEC A WEST 4 SEC A WEST 4 BOTTOM -- 5/3/2021	SEC A WEST 4 SEC A WEST 4 TOP 3.0 - 4.0 5/3/2021	SEC B EAST 5 SEC B EAST 5 BOTTOM -- 5/6/2021	SEC B EAST 5 SEC B EAST 5 TOP -- 5/6/2021	SEC B EAST 6 SEC B EAST 6 BOTTOM -- 5/6/2021	SEC B EAST 6 SEC B EAST 6 TOP -- 5/6/2021	SEC B EAST 7 SEC B EAST 7 BOTTOM -- 5/6/2021	SEC B EAST 7 SEC B EAST 7 TOP -- 5/6/2021
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	ND (0.0556)	ND (0.0567)	ND (0.074)	ND (0.0633)	ND (0.0634)	ND (0.0607)	ND (0.0694)	0.0514 J	ND (0.0635)
Benzene	--	33	0.025	0.025	ND (0.00111)	ND (0.00113)	ND (0.00148)	ND (0.00127)	ND (0.00127)	ND (0.00121)	ND (0.00139)	ND (0.0013)	ND (0.00127)
2-Butanone	--	120000	6.1	15	ND (0.111)	ND (0.113)	ND (0.148)	ND (0.127)	ND (0.127)	ND (0.121)	ND (0.139)	ND (0.13)	ND (0.127)
Chloroform	--	34	0.023	0.023	ND (0.00278)	ND (0.00283)	ND (0.0037)	ND (0.00317)	ND (0.00317)	ND (0.00303)	ND (0.00347)	ND (0.00325)	ND (0.00317)
Cumene	--	--	--	--	ND (0.00278)	ND (0.00283)	ND (0.0037)	ND (0.00317)	ND (0.00317)	ND (0.00303)	ND (0.00347)	ND (0.00325)	ND (0.00317)
p-Cymene	--	--	--	--	ND (0.00556)	ND (0.00567)	0.00481 J	ND (0.00633)	ND (0.00634)	ND (0.00607)	ND (0.00694)	ND (0.0065)	ND (0.00635)
1,2-Dichlorobenzene	--	7800	1	1	ND (0.00556)	ND (0.00567)	ND (0.0074)	ND (0.00633)	ND (0.00634)	ND (0.00607)	ND (0.00694)	ND (0.0065)	ND (0.00635)
1,4-Dichlorobenzene	--	280	0.2	0.2	ND (0.00556)	ND (0.00567)	ND (0.0074)	ND (0.00633)	ND (0.00634)	ND (0.00607)	ND (0.00694)	ND (0.0065)	ND (0.00635)
1,2-Dichloroethane	--	45	0.007	0.031	ND (0.00278)	ND (0.00283)	ND (0.0037)	ND (0.00317)	ND (0.00317)	ND (0.00303)	ND (0.00347)	ND (0.00325)	ND (0.00317)
Ethyl Benzene	--	540	0.43	0.43	ND (0.00278)	ND (0.00283)	ND (0.0037)	ND (0.00317)	ND (0.00317)	ND (0.00303)	ND (0.00347)	ND (0.00325)	ND (0.00317)
Methyl tert-butyl ether	--	4100	0.028	2.5	ND (0.00111)	ND (0.00113)	ND (0.00148)	ND (0.00127)	ND (0.00127)	ND (0.00121)	ND (0.00139)	ND (0.0013)	ND (0.00127)
Methylene Chloride	--	490	0.12	0.19	ND (0.0278)	ND (0.0283)	ND (0.037)	ND (0.0317)	ND (0.0317)	ND (0.0303)	ND (0.0347)	ND (0.0325)	ND (0.0317)
Propylbenzene	--	--	--	--	ND (0.00556)	ND (0.00567)	ND (0.0074)	ND (0.00633)	ND (0.00634)	ND (0.00607)	ND (0.00694)	ND (0.0065)	ND (0.00635)
Tetrachloroethene	--	33	0.08	0.08	ND (0.00278)	ND (0.00283)	ND (0.0037)	ND (0.00317)	ND (0.00317)	ND (0.00303)	ND (0.00347)	ND (0.00325)	ND (0.00317)
Toluene	--	4700	3.2	10	ND (0.00556)	0.00346 J	0.0391	ND (0.00633)	ND (0.00634)	ND (0.00607)	ND (0.00694)	ND (0.0065)	0.00239 J
1,2,3-Trimethylbenzene	--	--	--	--	ND (0.00556)	ND (0.00567)	ND (0.0074)	ND (0.00633 J4)	ND (0.00634 J4)	ND (0.00607 J4)	ND (0.00694 J4)	ND (0.0065 J4)	ND (0.00635 J4)
1,2,4-Trimethylbenzene	--	--	--	--	ND (0.00556)	ND (0.00567)	ND (0.0074)	ND (0.00633)	ND (0.00634)	ND (0.00607)	ND (0.00694)	ND (0.0065)	ND (0.00635)
1,3,5-Trimethylbenzene	--	--	--	--	ND (0.00556)	ND (0.00567)	ND (0.0074)	ND (0.00633)	ND (0.00634)	ND (0.00607)	ND (0.00694)	ND (0.0065)	ND (0.00635)
Xylenes (total)	--	2400	2.1	10	ND (0.00723)	ND (0.00737)	0.00655 J	ND (0.00823)	ND (0.00824)	ND (0.00789)	ND (0.00902)	ND (0.00845)	ND (0.00825)
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	ND (0.00634)	0.0445 J	ND (0.00744)	0.0199	ND (0.0068)	ND (0.00664)	ND (0.00716)	ND (0.0069)	ND (0.00681)
Acenaphthylene	0.64	--	6.4	6.4	ND (0.00634)	ND (0.064)	ND (0.00744)	0.207 J	ND (0.0068)	ND (0.00664)	ND (0.00716)	0.00314 J	ND (0.00681)
Anthracene	1.1	50000	1.9	1.9	ND (0.00634)	0.101	0.0041 J	0.225 J	ND (0.0068)	ND (0.00664)	ND (0.00716)	0.00387 J	ND (0.00681)
Benzo(a)anthracene	1.6	110	10	10	0.00596 J	0.0187 J	0.0379	0.683	0.00721	0.00436 J	0.00727	0.00986	0.0166
Benzo(a)pyrene	1.6	11	5.7	5.7	0.0382	0.0422 J	0.0359	0.542	0.00933	ND (0.00664)	0.00743	0.00851	0.0229
Benzo(b)fluoranthene	--	110	5.4	75	0.0221	0.0609 J	0.0477	0.553	0.0112	0.0026 J	0.01	0.00981	0.0263
Benzo(g,h,i)perylene	--	--	27	27	0.0136	0.0625 J	0.0295	0.316	0.0108	ND (0.00664)	0.00987	0.0105	0.0257
Benzo(k)fluoranthene	--	910	4.8	39	0.00296 J	ND (0.064)	0.0183	0.181	0.00391 J	ND (0.00664)	0.00309 J	0.00339 J	0.00848
Chrysene	2.8	9100	2.2	10	0.0516	0.0955	0.0464	0.739	0.00805	0.00416 J	0.00763	0.0128	0.02
Dibenz(a,h)anthracene	0.26	11	29	390	0.0039 J	ND (0.064)	0.00782	0.0831	0.00234 J	ND (0.00664)	ND (0.00716)	0.00314 J	0.00465 J
Fluoranthene	5.1	6700	86	86	0.00987	0.0753	0.0348	1.02	0.0124	0.0101	0.0122	0.0205	0.0257
Fluorene	0.54	6700	6	6	ND (0.00634)	0.0489 J	ND (0.00744)	0.246 J	ND (0.0068)	ND (0.00664)	ND (0.00716)	0.00774	ND (0.00681)
Indeno(1,2,3-cd)pyrene	--	110	16	32	0.00653	ND (0.064)	0.0212	0.332	0.00931	ND (0.00664)	0.00754	0.00584 J	0.0193
1-Methylnaphthalene	--	--	--	--	ND (0.0211)	ND (0.213)	ND (0.0248)	0.151	ND (0.0227)	ND (0.0221)	ND (0.0239)	0.0055 J	ND (0.0227)
2-Methylnaphthalene	0.67	670	0.88	0.88	0.00487 J	ND (0.213)	ND (0.0248)	0.15	ND (0.0227)	ND (0.0221)	ND (0.0239)	0.00571 J	ND (0.0227)
Naphthalene	2.1	400	0.042	1.2	0.00741 J	0.074 J	0.00905 J	0.235	ND (0.0159)	ND (0.0152)	ND (0.0173)	0.00855 J	0.00487 J
Phenanthrene	1.5	--	11	11	0.0108	0.175	0.0203	1.53	0.0073	0.00349 J	0.00561 J	0.0418	0.011
Phenol	--	98000	0.16	18	ND (3.52)	ND (17.8)	ND (0.826)	ND (3.77)	ND (3.78)	ND (0.369)	ND (0.795)	0.0349 J	ND (0.755)
bis(2-Ethylhexyl)phthalate	--	950	190	640	ND (3.52)	ND (17.8)	ND (0.826)	ND (3.77)	ND (3.78)	ND (0.369)	ND (0.795)	ND (0.766)	ND (0.755)
Butylbenzylphthalate	--	--	--	--	ND (3.52)	ND (17.8)	ND (0.826)	ND (3.77)	ND (3.78)	ND (0.369)	0.0264 J	ND (0.766)	ND (0.755)
Di-n-butylphthalate	--	--	--	--	ND (3.52)	ND (17.8)	ND (0.826)	ND (3.77)	ND (3.78)	ND (0.369)	ND (0.795)	ND (0.766)	ND (0.755)
Di-n-octylphthalate	--	--	--	--	ND (3.52)	ND (17.8)	ND (0.826)	ND (3.77)	ND (3.78)	ND (0.369)	ND (0.795)	ND (0.766)	ND (0.755)
Pyrene	2.6	5000	45	45	0.0182	0.0961	0.0549	1.39	0.0141	0.0112	0.0127	0.0255	0.0294
Pesticides													
Aldrin	--	1	8.4	8.4	ND (0.0211)	ND (0.0213)	ND (0.0248)	ND (0.0227)	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)
Chlordane (total)	0.0048	14	23	23	ND (0.317)	ND (0.32)	ND (0.372)	0.761	0.443	ND (0.332)	ND (0.358)	ND (0.345)	0.288 J
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	ND (0.0211)	ND (0.0213)	ND (0.0248)	ND (0.0227)	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)
4,4'-DDE	--	57	29	29	ND (0.0211)	ND (0.0213)	ND (0.0248)	ND (0.0227)	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)
4,4'-DDT	--	57	5.6	5.6	ND (0.0211)	ND (0.0213)	ND (0.0248)	ND (0.0227)	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)
Dieldrin	0.0043	1.1	0.00046	0.0063	ND (0.0211)	ND (0.0213)	ND (0.0248)	ND (0.0227)	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)
Endosulfan II	--	--	--	--	ND (0.0211)	ND (0.0213)	ND (0.0248)	ND (0.0227)	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)
Endrin	--	74	0.0076	0.0076	ND (0.0211)	ND (0.0213)	ND (0.0248)	ND (0.0227)	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)
Heptachlor epoxide	--	1.9	0.00018	0.006	ND (0.0211)	ND (0.0213)	ND (0.0248)	0.00573 J	ND (0.0227)	ND (0.0221)	ND (0.0239)	ND (0.023)	ND (0.0227)

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC A WEST 3 SEC A WEST 3 TOP 3.0 - 4.0 5/3/2021	SEC A WEST 4 SEC A WEST 4 BOTTOM -- 5/3/2021	SEC A WEST 4 SEC A WEST 4 TOP 3.0 - 4.0 5/3/2021	SEC B EAST 5 SEC B EAST 5 BOTTOM -- 5/6/2021	SEC B EAST 5 SEC B EAST 5 TOP -- 5/6/2021	SEC B EAST 6 SEC B EAST 6 BOTTOM -- 5/6/2021	SEC B EAST 6 SEC B EAST 6 TOP -- 5/6/2021	SEC B EAST 7 SEC B EAST 7 BOTTOM -- 5/6/2021	SEC B EAST 7 SEC B EAST 7 TOP -- 5/6/2021
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	17.7 J	169 J	57.5	57.2	14.4 J; J3	1.52 J	7.15	21.4 J	16.7 J
Gasoline Range Organics	--	1800	1100	4900	0.32 B	0.0676 B ; J	0.108 B ; J	ND (0.113)	ND (0.113)	ND (0.111)	ND (0.119)	ND (0.115)	ND (0.113)
Motor Oil	--	54000	--	--	135	2910	263	176	116	2.94 J	52.2	163	135
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	ND (0.018)	ND (0.0181)	ND (0.0211)	ND (0.0193)	ND (0.0193)	ND (0.0188)	ND (0.0203)	ND (0.0195)	ND (0.0193)
Aroclor-1260	--	--	--	--	0.0605	ND (0.0181)	1.18	0.158	0.112	ND (0.0188)	0.112	0.0147 J; P	0.0752
PCBs (total)	0.18	5.5	330	330	0.0605	ND (0.0363)	1.18	0.158	0.112	ND (0.0376)	0.112	0.0147 J; P	0.0752
Metals													
Antimony	--	50	--	--	1.01 J	ND (2.13)	1.66 J	1.93 J; J6	ND (2.27)	ND (2.21)	ND (2.39)	ND (2.3)	ND (2.27)
Arsenic	0.07	0.98	--	--	4.35	1.34 J	7.89	5.88	4.23	0.939 J	4.4	2.54	3.52
Barium	--	3000	--	--	198	65.7	414	198 O1	187	307	209	209	135
Beryllium	--	27	--	--	0.478	ND (0.213)	0.418	0.456	0.388	0.796	0.411	0.433	0.282
Cadmium	0.0096	51	--	--	0.85	0.36 J	11.1	2.56	5.31	5.47	3.57	1.14	1.56
Chromium (total)	0.37	--	--	--	54	31.2	97.5	50.7 J3; J6; O1	48.9	72.6	51.9	49.7	44.4
Chromium VI	--	2.8	--	--	ND (2.11)	ND (2.13)	ND (2.48)	ND (2.27)	ND (2.27)	ND (2.21)	ND (2.39)	ND (2.3)	ND (2.27)
Cobalt	--	28	--	--	10.4	6.91	11.9	14.9	13.3	13.8	13.2	10.4	9.87
Copper	0.27	14000	--	--	37.2	16.1	259	121 J3; J5; J6; O1	55.7	45.2	74.4	32.5	50.8
Cyanide (total)	--	22	0.0034	0.0034	**0.0785 J**	**0.117 J**	**0.703**	**0.282 J**	**0.206 J**	**0.251 J; J6**	**0.115 J**	**0.195 J**	ND (0.284)
Lead	0.218	160	--	--	46.2	10.8	468	175 J3; J5; J6	88.3	46.6	109	30.7	64.5
Mercury	0.0007	44	--	--	0.123	0.027 J	0.418	0.187	0.212	0.0578	0.218	0.148	0.198
Molybdenum	--	1800	--	--	0.465 J	0.267 J	3.51	0.788	ND (0.567)	0.367 J	0.457 J	0.235 J	0.28 J
Nickel	0.12	86	--	--	69.9	46	67.8	52.2	55.1	77.2	80.4	60.4	44.7
Perchlorate	--	250	--	--	ND (0.0422)	ND (0.0427)	ND (0.0496)	ND (0.0453)	ND (0.0453)	ND (0.0443)	ND (0.0477)	ND (0.23)	ND (0.0454)
Selenium	--	1700	--	--	2.18	ND (2.13)	1.92 J	2.8	6.18	2.55	1.06 J	1.57 J	1.94 J
Silver	0.0037	1800	--	--	ND (1.06)	ND (1.07)	1.89	0.289 J	1.41	ND (1.11)	0.165 J	ND (1.15)	ND (1.13)
Thallium	--	3.5	--	--	ND (2.11)	ND (2.13)	ND (2.48)	ND (2.27)	ND (2.27)	ND (2.21)	ND (2.39)	ND (2.3)	ND (2.27)
Vanadium	--	470	--	--	51.1	30	60.6	54.7 O1	52.5	58.6	55.5	44.8	57
Zinc	0.41	110000	--	--	102	32.7	621	210 J3; J5; J6; O1	129	142	137	96.8	109

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC B EAST 8 SEC B EAST 8 BOTTOM -- 5/6/2021	SEC B EAST 8 SEC B EAST 8 TOP -- 5/6/2021	SEC B WEST 5 SEC B WEST 5 BOTTOM -- 5/4/2021	SEC B WEST 5 SEC B WEST 5 TOP 3.0 - 4.0 5/4/2021	SEC B WEST 6 SEC B WEST 6 BOTTOM -- 5/4/2021	SEC B WEST 6 SEC B WEST 6 TOP 3.0 - 4.0 5/4/2021	SEC B WEST 7 SEC B WEST 7 BOTTOM -- 5/4/2021	SEC B WEST 7 SEC B WEST 7 TOP 3.0 - 4.0 5/4/2021	SEC B WEST 8 SEC B WEST 8 BOTTOM -- 5/4/2021
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	ND (0.0707)	ND (0.0609)	ND (0.0664)	ND (0.0669)	NA	NA	NA	NA	NA
Benzene	--	33	0.025	0.025	ND (0.00141)	ND (0.00122)	ND (0.00133)	ND (0.00134)	NA	NA	NA	NA	NA
2-Butanone	--	120000	6.1	15	ND (0.141)	ND (0.122)	ND (0.133)	ND (0.134)	0.116 B ; J (0.168)	0.093 B ; J (0.122)	0.116 B ; J (0.16)	0.0988 B ; J (0.143)	NA
Chloroform	--	34	0.023	0.023	ND (0.00354)	ND (0.00305)	ND (0.00332)	ND (0.00335)	NA	NA	NA	NA	NA
Cumene	--	--	--	--	ND (0.00354)	ND (0.00305)	ND (0.00332)	ND (0.00335)	NA	NA	NA	NA	NA
p-Cymene	--	--	--	--	ND (0.00707)	ND (0.00609)	ND (0.00664)	ND (0.00669)	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	--	7800	1	1	ND (0.00707)	ND (0.00609)	ND (0.00664)	ND (0.00669)	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	--	280	0.2	0.2	ND (0.00707)	ND (0.00609)	ND (0.00664)	ND (0.00669)	NA	NA	NA	NA	NA
1,2-Dichloroethane	--	45	0.007	0.031	ND (0.00354)	ND (0.00305)	ND (0.00332)	ND (0.00335)	NA	NA	NA	NA	NA
Ethyl Benzene	--	540	0.43	0.43	ND (0.00354)	ND (0.00305)	ND (0.00332)	ND (0.00335)	NA	NA	NA	NA	NA
Methyl tert-butyl ether	--	4100	0.028	2.5	ND (0.00141)	ND (0.00122)	ND (0.00133)	ND (0.00134)	NA	NA	NA	NA	NA
Methylene Chloride	--	490	0.12	0.19	ND (0.0354)	ND (0.0305)	ND (0.0332)	ND (0.0335)	NA	NA	NA	NA	NA
Propylbenzene	--	--	--	--	ND (0.00707)	ND (0.00609)	ND (0.00664)	ND (0.00669)	NA	NA	NA	NA	NA
Tetrachloroethene	--	33	0.08	0.08	ND (0.00354)	ND (0.00305)	ND (0.00332)	ND (0.00335)	NA	NA	NA	NA	NA
Toluene	--	4700	3.2	10	ND (0.00707)	ND (0.00609)	0.00292 J	0.00821	NA	0.00297 J (0.00612)	0.0105 (0.00801)	0.0262 (0.00715)	NA
1,2,3-Trimethylbenzene	--	--	--	--	ND (0.00707 J4)	ND (0.00609 J4)	ND (0.00664)	ND (0.00669)	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	--	--	--	--	ND (0.00707)	ND (0.00609)	ND (0.00664)	ND (0.00669)	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	--	--	--	--	ND (0.00707)	ND (0.00609)	ND (0.00664)	ND (0.00669)	NA	NA	NA	NA	NA
Xylenes (total)	--	2400	2.1	10	ND (0.0092)	ND (0.00792)	0.00259 J	0.00214 J	NA	NA	0.00148 J (0.0104)	NA	NA
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	ND (0.00724)	ND (0.00665)	0.00593 J	0.00869	0.00428 J (0.00804)	NA	NA	NA	NA
Acenaphthylene	0.64	--	6.4	6.4	ND (0.00724)	ND (0.00665)	ND (0.00699)	ND (0.00702)	0.0033 J (0.00804)	NA	NA	0.00455 J (0.00729)	NA
Anthracene	1.1	50000	1.9	1.9	ND (0.00724)	ND (0.00665)	0.00439 J	0.0108	0.231 J (0.446)	0.0233 J (0.074)	0.0033 J (0.0078)	0.00733 (0.00729)	NA
Benzo(a)anthracene	1.6	110	10	10	0.0116	0.00672	0.0146	0.115	0.0353 (0.00804)	0.0209 (0.00667)	0.0636 (0.0078)	0.0228 (0.00729)	0.00605 J (0.00766)
Benzo(a)pyrene	1.6	11	5.7	5.7	0.0145	0.00969	0.0147	0.124	0.0534 (0.00804)	0.0295 (0.00667)	0.142 (0.0078)	0.034 (0.00729)	0.0103 (0.00766)
Benzo(b)fluoranthene	--	110	5.4	75	0.0176	0.0115	0.0295	0.129	0.0693 (0.00804)	0.0371 (0.00667)	0.179 (0.0078)	0.0503 (0.00729)	0.0131 (0.00766)
Benzo(g,h,i)perylene	--	--	27	27	0.0204	0.0152	0.0297	0.0581	0.112 (0.00804)	0.0361 (0.00667)	0.161 (0.0078)	0.0406 (0.00729)	0.0119 (0.00766)
Benzo(k)fluoranthene	--	910	4.8	39	0.00566 J	0.00334 J	0.00674 J	0.0505	0.0186 (0.00804)	0.0106 (0.00667)	0.0606 (0.0078)	0.0151 (0.00729)	0.00457 J (0.00766)
Chrysene	2.8	9100	2.2	10	0.011	0.00699	0.019	0.145	0.0361 (0.00804)	0.0256 (0.00667)	0.1 (0.0078)	0.0404 (0.00729)	0.00966 (0.00766)
Dibenz(a,h)anthracene	0.26	11	29	390	0.00332 J	0.00308 J	0.00739	0.0175	0.0166 (0.00804)	0.00832 (0.00667)	0.0378 (0.0078)	0.00749 (0.00729)	0.0026 J (0.00766)
Fluoranthene	5.1	6700	86	86	0.018	0.0132	0.0204	0.108	0.0578 (0.00804)	0.034 (0.00667)	0.0481 (0.0078)	0.0758 (0.00729)	0.00526 J (0.00766)
Fluorene	0.54	6700	6	6	ND (0.00724)	ND (0.00665)	0.00499 J	0.00364 J	0.132 J (0.446)	0.0253 J (0.074)	NA	0.00401 J (0.00729)	NA
Indeno(1,2,3-cd)pyrene	--	110	16	32	0.0135	0.00933	0.00987	0.0523	0.0473 (0.00804)	0.031 (0.00667)	0.174 (0.0078)	0.0342 (0.00729)	0.0119 (0.00766)
1-Methylnaphthalene	--	--	--	--	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	0.00794 J (0.0268)	NA	NA	0.00579 J (0.0243)	NA
2-Methylnaphthalene	0.67	670	0.88	0.88	ND (0.0241)	0.00646 J	0.00685 J	0.00545 J	0.0177 J (0.0268)	NA	0.00796 J (0.026)	0.00656 J (0.0243)	NA
Naphthalene	2.1	400	0.042	1.2	0.00611 J	0.00712 J	0.0166 J	0.0115 J	1.1 B (0.446)	0.644 (0.074)	0.0107 J (0.026)	0.0103 J (0.0243)	NA
Phenanthrene	1.5	--	11	11	0.00652 J	0.00952	0.0292	0.0496	0.035 (0.00804)	0.0127 (0.00667)	0.0165 (0.0078)	0.0718 (0.00729)	0.00431 J (0.00766)
Phenol	--	98000	0.16	18	0.0507 J	ND (3.69)	ND (3.88)	ND (3.9)	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	950	190	640	ND (0.804)	ND (3.69)	ND (3.88)	ND (3.9)	NA	NA	NA	0.588 J (2.03)	NA
Butylbenzylphthalate	--	--	--	--	ND (0.804)	ND (3.69)	ND (3.88)	ND (3.9)	NA	NA	NA	NA	NA
Di-n-butylphthalate	--	--	--	--	ND (0.804)	ND (3.69)	ND (3.88)	ND (3.9)	NA	NA	NA	NA	NA
Di-n-octylphthalate	--	--	--	--	ND (0.804)	ND (3.69)	ND (3.88)	ND (3.9)	NA	NA	NA	NA	NA
Pyrene	2.6	5000	45	45	0.02	0.0132	0.034	0.211	0.0606 (0.00804)	0.0339 (0.00667)	0.0521 (0.0078)	0.0673 (0.00729)	0.00565 J (0.00766)
Pesticides													
Aldrin	--	1	8.4	8.4	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	NA	NA	NA	NA
Chlordane (total)	0.0048	14	23	23	ND (0.362)	0.349	ND (0.349)	ND (0.351)	NA	NA	NA	NA	NA
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	0.0429 (0.0222)	NA	NA	NA
4,4'-DDE	--	57	29	29	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	NA	NA	NA	NA
4,4'-DDT	--	57	5.6	5.6	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	0.035 (0.0222)	NA	NA	NA
Dieldrin	0.0043	1.1	0.00046	0.0063	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	0.00597 J; P (0.0222)	NA	NA	NA
Endosulfan II	--	--	--	--	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	NA	NA	NA	NA
Endrin	--	74	0.0076	0.0076	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	NA	NA	NA	NA
Heptachlor epoxide	--	1.9	0.00018	0.006	ND (0.0241)	ND (0.0222)	ND (0.0233)	ND (0.0234)	NA	NA	NA	NA	NA

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Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	22.4 J	10.8	38.1 J	15.6 J	68.6 (53.6)	16.1 J (44.5)	129 J (520)	43.5 (4.86)	3.93 J (5.1)
Gasoline Range Organics	--	1800	1100	4900	ND (0.121)	ND (0.111)	0.063 B ; J	0.0577 B ; J	0.0782 B ; J (0.134)	0.163 B (0.111)	0.0939 B ; J (0.13)	0.113 B ; J (0.121)	0.0688 B ; J (0.128)
Motor Oil	--	54000	--	--	362	74.4	246	86.2	229 (53.6)	152 (44.5)	801 (520)	59 (4.86)	21.3 (5.1)
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	ND (0.0205)	ND (0.0188)	ND (0.0198)	ND (0.0199)	NA	NA	NA	NA	NA
Aroclor-1260	--	--	--	--	ND (0.0205)	0.125	1.03	0.497	1.28 (0.0228)	0.149 P (0.0189)	NA	1.63 (0.0413)	NA
PCBs (total)	0.18	5.5	330	330	ND (0.041)	0.125	1.03	0.497	1.28 (0.0228)	0.149 P (0.0189)	NA	1.63 (0.0413)	NA
Metals													
Antimony	--	50	--	--	0.824 J	ND (2.22)	4.16	0.805 J	1.33 J (2.68)	0.795 J (2.22)	NA	0.786 J (2.43)	NA
Arsenic	0.07	0.98	--	--	5.64	3.46	3.57	4.43	4 (2.68)	5.14 (2.22)	3.41 (2.6)	3.51 (2.43)	4.2 (2.55)
Barium	--	3000	--	--	309	145	235	203	831 (0.67)	185 (0.556)	299 (0.65)	186 (0.607)	205 (0.638)
Beryllium	--	27	--	--	0.654	0.387	0.112 J	0.227 J	0.577 (0.268)	0.146 J (0.222)	0.386 (0.26)	0.192 J (0.243)	0.582 (0.255)
Cadmium	0.0096	51	--	--	0.839	1.18	18.3	6.41	6.88 (0.67)	2.86 (0.556)	1.66 (0.65)	4 (0.607)	0.957 (0.638)
Chromium (total)	0.37	--	--	--	50.3	52.6	75.2	54.8	106 (1.34)	49.1 (1.11)	58.2 (1.3)	53.4 (1.21)	69.6 (1.28)
Chromium VI	--	2.8	--	--	ND (2.41)	ND (2.22)	ND (2.33)	1.12 J	NA	NA	NA	NA	NA
Cobalt	--	28	--	--	13.5	10.5	14	11.8	14.7 (1.34)	13.3 (1.11)	13 (1.3)	13.4 (1.21)	12.5 (1.28)
Copper	0.27	14000	--	--	38.5	42.1	132	63.1	221 (2.68)	53.5 (2.22)	63.7 (2.6)	73.4 (2.43)	31.2 (2.55)
Cyanide (total)	--	22	0.0034	0.0034	**0.185 J**	**0.154 J**	**0.561**	**1**	**0.592 (0.335)**	**0.099 J (0.278)**	NA	**0.131 J (0.304)**	**0.229 J (0.319)**
Lead	0.218	160	--	--	42.5	69.9	264	113	455 (0.67)	61.5 (0.556)	82.9 (0.65)	112 (0.607)	22.5 (0.638)
Mercury	0.0007	44	--	--	0.0971	0.122	0.109	0.154	3.54 (0.268)	0.297 (0.0445)	0.0702 (0.052)	0.23 (0.0486)	0.0461 J (0.051)
Molybdenum	--	1800	--	--	0.751	0.487 J	1.94	0.236 J	2.11 (0.67)	0.168 J (0.556)	0.375 J (0.65)	0.496 J (0.607)	NA
Nickel	0.12	86	--	--	65.3	72.1	160	55.4	94.1 (2.68)	59.3 (2.22)	68.7 (2.6)	63.9 (2.43)	77.8 (2.55)
Perchlorate	--	250	--	--	ND (0.0483)	ND (0.0443)	ND (0.233 J5)	ND (0.0468)	NA	NA	NA	NA	NA
Selenium	--	1700	--	--	2.18 J	1.32 J	ND (2.33)	ND (2.34)	NA	NA	NA	1.05 J (2.43)	1.37 J (2.55)
Silver	0.0037	1800	--	--	ND (1.21)	ND (1.11)	1.77	0.327 J	1.57 (1.34)	0.298 J (1.11)	0.473 J (1.3)	0.395 J (1.21)	NA
Thallium	--	3.5	--	--	ND (2.41)	ND (2.22)	ND (2.33)	ND (2.34)	NA	NA	NA	NA	NA
Vanadium	--	470	--	--	58.1	43.6	35.6	50.4	61.9 (2.68)	60.8 (2.22)	59.2 (2.6)	48.8 (2.43)	61.9 (2.55)
Zinc	0.41	110000	--	--	117	149	2120	130	674 (6.7)	116 (5.56)	200 (6.5)	169 (6.07)	79.6 (6.38)

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC B WEST 8 SEC B WEST 8 TOP 3.0 - 4.0 5/4/2021	SEC C EAST 10 SEC C EAST 10 BOTTOM -- 5/6/2021	SEC C EAST 10 SEC C EAST 10 TOP 3.0 - 4.0 5/6/2021	SEC C EAST 11 SEC C EAST 11 BOTTOM -- 5/6/2021	SEC C EAST 11 SEC C EAST 11 TOP 3.0 - 4.0 5/6/2021	SEC C EAST 12 SEC C EAST 12 BOTTOM -- 5/7/2021	SEC C EAST 12 SEC C EAST 12 TOP 3.0 - 4.0 5/7/2021	SEC C EAST 9 SEC C EAST 9 BOTTOM -- 5/6/2021	SEC C EAST 9 SEC C EAST 9 TOP 3.0 - 4.0 5/6/2021
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	NA	ND (0.0785)	ND (0.0548)	ND (0.0762)	ND (0.0665)	ND (0.065)	ND (0.0558)	ND (0.0612)	ND (0.0611)
Benzene	--	33	0.025	0.025	NA	ND (0.00157)	ND (0.0011)	ND (0.00152)	ND (0.00133)	ND (0.0013)	ND (0.00112)	ND (0.00122)	ND (0.00122)
2-Butanone	--	120000	6.1	15	NA	ND (0.157)	0.0705 B ; J	ND (0.152)	0.0943 B ; J	0.0846 B ; J	ND (0.112)	ND (0.122)	ND (0.122)
Chloroform	--	34	0.023	0.023	NA	ND (0.00392)	ND (0.00274)	ND (0.00381)	ND (0.00332)	ND (0.00325)	ND (0.00279)	ND (0.00306)	ND (0.00306)
Cumene	--	--	--	--	NA	ND (0.00392)	ND (0.00274)	ND (0.00381)	ND (0.00332)	ND (0.00325)	ND (0.00279)	ND (0.00306)	ND (0.00306)
p-Cymene	--	--	--	--	NA	0.00687 J	ND (0.00548)	ND (0.00762)	ND (0.00665)	ND (0.0065)	ND (0.00558)	ND (0.00612)	ND (0.00611)
1,2-Dichlorobenzene	--	7800	1	1	NA	ND (0.00785)	ND (0.00548)	ND (0.00762)	ND (0.00665)	ND (0.0065)	ND (0.00558)	ND (0.00612)	ND (0.00611)
1,4-Dichlorobenzene	--	280	0.2	0.2	NA	ND (0.00785)	ND (0.00548)	ND (0.00762)	ND (0.00665)	ND (0.0065)	ND (0.00558)	ND (0.00612)	ND (0.00611)
1,2-Dichloroethane	--	45	0.007	0.031	NA	ND (0.00392)	ND (0.00274)	ND (0.00381)	ND (0.00332)	ND (0.00325)	ND (0.00279)	0.000796 J	ND (0.00306)
Ethyl Benzene	--	540	0.43	0.43	NA	ND (0.00392)	ND (0.00274)	ND (0.00381)	ND (0.00332)	ND (0.00325)	ND (0.00279)	ND (0.00306)	ND (0.00306)
Methyl tert-butyl ether	--	4100	0.028	2.5	NA	ND (0.00157)	ND (0.0011)	ND (0.00152)	ND (0.00133)	ND (0.0013)	ND (0.00112)	ND (0.00122)	ND (0.00122)
Methylene Chloride	--	490	0.12	0.19	NA	ND (0.0392)	ND (0.0274)	ND (0.0381)	ND (0.0332)	ND (0.0325)	ND (0.0279)	ND (0.0306)	ND (0.0306)
Propylbenzene	--	--	--	--	NA	ND (0.00785)	ND (0.00548)	ND (0.00762)	ND (0.00665)	ND (0.0065)	ND (0.00558)	ND (0.00612)	ND (0.00611)
Tetrachloroethene	--	33	0.08	0.08	NA	ND (0.00392)	ND (0.00274)	ND (0.00381)	ND (0.00332)	ND (0.00325)	ND (0.00279)	ND (0.00306)	ND (0.00306)
Toluene	--	4700	3.2	10	0.00439 J (0.00626)	ND (0.00785)	0.00192 J	ND (0.00762)	ND (0.00665)	ND (0.0065)	ND (0.00558)	ND (0.00612)	0.00187 J
1,2,3-Trimethylbenzene	--	--	--	--	NA	ND (0.00785 J4)	ND (0.00548 J4)	ND (0.00762 J4)	ND (0.00665 J4)	ND (0.0065 J4)	ND (0.00558 J4)	ND (0.00612 J4)	ND (0.00611 J4)
1,2,4-Trimethylbenzene	--	--	--	--	NA	ND (0.00785)	ND (0.00548)	ND (0.00762)	ND (0.00665)	ND (0.0065)	ND (0.00558)	ND (0.00612)	ND (0.00611)
1,3,5-Trimethylbenzene	--	--	--	--	NA	ND (0.00785)	ND (0.00548)	ND (0.00762)	ND (0.00665)	ND (0.0065)	ND (0.00558)	ND (0.00612)	ND (0.00611)
Xylenes (total)	--	2400	2.1	10	NA	ND (0.0102)	ND (0.00713)	ND (0.0099)	ND (0.00864)	ND (0.00845)	ND (0.00725)	ND (0.00796)	ND (0.00795)
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	NA	ND (0.0077)	0.00464 J	ND (0.00757)	ND (0.00699)	ND (0.0069)	ND (0.00635)	ND (0.00667)	ND (0.00666)
Acenaphthylene	0.64	--	6.4	6.4	NA	ND (0.0077)	ND (0.00629)	ND (0.00757)	ND (0.00699)	ND (0.0069)	ND (0.00635)	ND (0.00667)	ND (0.00666)
Anthracene	1.1	50000	1.9	1.9	0.00279 J (0.00675)	0.00436 J	0.0142 J	ND (0.00757)	ND (0.00699)	ND (0.0069)	0.00287 J	ND (0.00667)	0.00434 J
Benzo(a)anthracene	1.6	110	10	10	0.0162 B (0.00675)	0.118	0.0218	0.00459 J	0.0112	0.00554 J	0.0206	0.00325 J	0.0198
Benzo(a)pyrene	1.6	11	5.7	5.7	0.0379 (0.00675)	0.127	0.0238	0.00607 J	0.0136	0.00823	0.022	0.00463 J	0.0251
Benzo(b)fluoranthene	--	110	5.4	75	0.0389 (0.00675)	0.187	0.0299	0.00712 J	0.0198	0.0104	0.0281	0.00539 J	0.0312
Benzo(g,h,i)perylene	--	--	27	27	0.0468 (0.00675)	0.107	0.0264	0.0112	0.0204	0.0215	0.0245	0.00625 J	0.0391
Benzo(k)fluoranthene	--	910	4.8	39	0.00846 (0.00675)	0.0567	0.011	ND (0.00757)	0.00609 J	0.00293 J	0.0105	ND (0.00667)	0.00962
Chrysene	2.8	9100	2.2	10	0.0199 (0.00675)	0.146	0.0254	0.00488 J	0.0123	0.00673 J	0.0202	0.00321 J	0.0223
Dibenz(a,h)anthracene	0.26	11	29	390	0.00678 (0.00675)	0.0203	0.00511 J	0.00229 J	0.0037 J	0.00389 J	0.00415 J	ND (0.00667)	0.00674
Fluoranthene	5.1	6700	86	86	0.0288 (0.00675)	0.255	0.0477	0.00816	0.0147 J3	0.0103	0.0356	0.00665 J	0.0407
Fluorene	0.54	6700	6	6	NA	ND (0.0077)	0.0052 J	ND (0.00757)	ND (0.00699)	ND (0.0069)	ND (0.00635)	ND (0.00667)	ND (0.00666)
Indeno(1,2,3-cd)pyrene	--	110	16	32	0.0304 (0.00675)	0.102	0.02	0.00615 J	0.014	0.00988	0.0209	0.004 J	0.0206
1-Methylnaphthalene	--	--	--	--	0.00666 J (0.0225)	ND (0.0257)	ND (0.021)	ND (0.0252)	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)
2-Methylnaphthalene	0.67	670	0.88	0.88	0.0147 J (0.0225)	ND (0.0257)	0.00509 J	0.00922 J	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)
Naphthalene	2.1	400	0.042	1.2	0.0212 J (0.0225)	0.00644 J	0.0072 J	0.00837 J	ND (0.0166)	0.0053 J	ND (0.0139)	ND (0.0153)	ND (0.0153)
Phenanthrene	1.5	--	11	11	0.0143 (0.00675)	0.0667	0.0378	0.0063 J	0.00594 J	0.00667 J	0.0111	0.00468 J	0.0241
Phenol	--	98000	0.16	18	NA	ND (0.855)	0.0415 J	0.129 J	ND (3.88)	ND (3.83)	ND (0.705)	ND (0.741)	ND (3.7)
bis(2-Ethylhexyl)phthalate	--	950	190	640	25.9 (7.49)	ND (0.855)	ND (0.698)	ND (0.84)	ND (3.88)	ND (3.83)	ND (0.705)	ND (0.741)	ND (3.7)
Butylbenzylphthalate	--	--	--	--	NA	ND (0.855)	ND (0.698)	ND (0.84)	ND (3.88)	ND (3.83)	ND (0.705)	ND (0.741)	ND (3.7)
Di-n-butylphthalate	--	--	--	--	NA	ND (0.855)	ND (0.698)	ND (0.84)	ND (3.88)	ND (3.83)	ND (0.705)	ND (0.741)	ND (3.7)
Di-n-octylphthalate	--	--	--	--	2.13 (1.88)	ND (0.855)	ND (0.698)	ND (0.84)	ND (3.88)	ND (3.83)	ND (0.705)	ND (0.741)	ND (3.7)
Pyrene	2.6	5000	45	45	0.039 (0.00675)	0.241	0.0396	0.0101	0.0177	0.011	0.034	0.00683	0.0427
Pesticides													
Aldrin	--	1	8.4	8.4	NA	ND (0.0257)	ND (0.021)	ND (0.0252)	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)
Chlordane (total)	0.0048	14	23	23	NA	0.277 J	0.272 J	ND (0.378)	ND (0.349)	0.261 J	0.283 J	0.218 J	0.295 J
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	NA	ND (0.0257)	0.00567 J	ND (0.0252)	ND (0.0233)	ND (0.023)	0.0113 J	ND (0.0222)	0.00618 J
4,4'-DDE	--	57	29	29	NA	ND (0.0257)	ND (0.021)	ND (0.0252)	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)
4,4'-DDT	--	57	5.6	5.6	0.0304 (0.0225)	ND (0.0257)	0.0146 J; P	ND (0.0252)	ND (0.0233)	ND (0.023)	0.013 J; P	ND (0.0222)	ND (0.0222)
Dieldrin	0.0043	1.1	0.00046	0.0063	NA	ND (0.0257)	**0.00687 J**	ND (0.0252)	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)
Endosulfan II	--	--	--	--	NA	ND (0.0257)	ND (0.021)	ND (0.0252)	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)
Endrin	--	74	0.0076	0.0076	NA	ND (0.0257)	ND (0.021)	ND (0.0252)	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)
Heptachlor epoxide	--	1.9	0.00018	0.006	NA	ND (0.0257)	ND (0.021)	ND (0.0252)	ND (0.0233)	ND (0.023)	ND (0.0212)	ND (0.0222)	ND (0.0222)

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location / Field Sample ID / Collection Depth (ft bgs) / Sample Date / Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC B WEST 8 / SEC B WEST 8 TOP / 3.0 - 4.0 / 5/4/2021	SEC C EAST 10 / SEC C EAST 10 BOTTOM / -- / 5/6/2021	SEC C EAST 10 / SEC C EAST 10 TOP / 3.0 - 4.0 / 5/6/2021	SEC C EAST 11 / SEC C EAST 11 BOTTOM / -- / 5/6/2021	SEC C EAST 11 / SEC C EAST 11 TOP / 3.0 - 4.0 / 5/6/2021	SEC C EAST 12 / SEC C EAST 12 BOTTOM / -- / 5/7/2021	SEC C EAST 12 / SEC C EAST 12 TOP / 3.0 - 4.0 / 5/7/2021	SEC C EAST 9 / SEC C EAST 9 BOTTOM / -- / 5/6/2021	SEC C EAST 9 / SEC C EAST 9 TOP / 3.0 - 4.0 / 5/6/2021
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	11.7 (4.5)	16	ND (210)	12	36.2	9.38 J	23.5	15.6	ND (222)
Gasoline Range Organics	--	1800	1100	4900	0.11 B ; J (0.113)	ND (0.128)	ND (0.105)	ND (0.126)	ND (0.116)	ND (0.115)	ND (0.106)	ND (0.111)	ND (0.111)
Motor Oil	--	54000	--	--	67.2 (4.5)	54.2	177 J	45.1	235	209	183	56.5	194 J
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	NA	ND (0.0218)	ND (0.0178)	ND (0.0214)	ND (0.0198)	ND (0.0195)	ND (0.018)	ND (0.0189)	ND (0.0189)
Aroclor-1260	--	--	--	--	0.42 (0.0191)	0.0368 P	0.114 P	0.238	0.048	0.0344	0.0879	ND (0.0189)	ND (0.0189)
PCBs (total)	0.18	5.5	330	330	0.42 (0.0191)	0.0368 P	0.114 P	0.238	0.048	0.0344	0.0879	ND (0.0378)	ND (0.0378)
Metals													
Antimony	--	50	--	--	NA	3.18	ND (2.1)	ND (2.52)	ND (2.33)	ND (2.3)	ND (2.12)	33.7	1.19 J
Arsenic	0.07	0.98	--	--	4.07 (2.25)	3.25	2.16	1.11 J	3.75	1.18 J	3.81	5.33	3.29
Barium	--	3000	--	--	210 (0.563)	203	96.6	266	165	71.1	129	280	132
Beryllium	--	27	--	--	0.165 J (0.225)	0.57	0.243	0.711	0.369	0.165 J	0.323	0.496	0.35
Cadmium	0.0096	51	--	--	3.11 (0.563)	1.55	0.922	2.06	2.17	0.979	1.04	4.89	4.28
Chromium (total)	0.37	--	--	--	47.6 (1.13)	58.6	36.3	70.4	47.5	15.5	34.2	51.4	41.4
Chromium VI	--	2.8	--	--	NA	ND (2.57 J6; O1)	ND (2.1)	ND (2.52 J3; J6; O1)	ND (2.33)	0.815 J	ND (2.12)	ND (2.22)	ND (2.22)
Cobalt	--	28	--	--	12.1 (1.13)	11.3	16.7	10.5	12.4	6.39	13.6	13.5	11.4
Copper	0.27	14000	--	--	70.2 (2.25)	2120	49.7	39.1	48.8	66.8	49.3	70.6	43
Cyanide (total)	--	22	0.0034	0.0034	**0.164 J (0.281)**	ND (0.321)	ND (0.262 P1)	**0.514 P1**	**0.0949 J**	ND (0.287)	**0.0848 J**	**0.102 J**	ND (0.278)
Lead	0.218	160	--	--	91.3 (0.563)	85.9	46.6	20.4	70	120	52.5	3060	125
Mercury	0.0007	44	--	--	0.241 (0.045)	0.0978	0.145	0.103 J3; J5	0.249	0.197	0.16	0.253	0.119
Molybdenum	--	1800	--	--	NA	0.676	0.294 J	ND (0.63)	0.694	ND (0.575)	0.296 J	0.888	0.449 J
Nickel	0.12	86	--	--	61.6 (2.25)	74.7	51.9	78.3	59	15.4	116	59.4	54.7
Perchlorate	--	250	--	--	NA	ND (0.0513)	ND (0.0419)	0.136 J	ND (0.0466)	ND (0.046)	ND (0.0423)	0.0191 J	ND (0.0444 J3; J6)
Selenium	--	1700	--	--	1.11 J (2.25)	2.14 J	1.33 J	1.82 J	2.7	1.17 J	1.88 J	2.35	1.9 J
Silver	0.0037	1800	--	--	0.309 J (1.13)	0.786 J	0.384 J	ND (1.26)	0.258 J	ND (1.15)	ND (1.06)	0.402 J	ND (1.11)
Thallium	--	3.5	--	--	NA	ND (2.57)	ND (2.1)	ND (2.52)	ND (2.33)	ND (2.3)	ND (2.12)	ND (2.22)	ND (2.22)
Vanadium	--	470	--	--	51.6 (2.25)	52.7	55.3	56.3	47.6	28.4	70	53.6	43.2
Zinc	0.41	110000	--	--	269 (5.63)	218	97.2	111	116	88	106	313	114

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC C WEST 10 SEC C WEST 10 BOTTOM -- 5/4/2021	SEC C WEST 10 SEC C WEST 10 TOP 3.0 - 4.0 5/4/2021	SEC C WEST 11 SEC C WEST 11 BOTTOM -- 5/5/2021	SEC C WEST 11 SEC C WEST 11 TOP 3.0 - 4.0 5/5/2021	SEC C WEST 12 SEC C WEST 12 BOTTOM -- 5/5/2021	SEC C WEST 12 SEC C WEST 12 TOP 3.0 - 4.0 5/5/2021	SEC C WEST 9 SEC C WEST 9 BOTTOM -- 5/4/2021	SEC C WEST 9 SEC C WEST 9 TOP 3.0 - 4.0 5/4/2021	SP S/S Composites SP-10 -- 5/21/2014 Composite
Physical Parameters													
Organic Carbon (total)	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	16000
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	12.4
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	NA	NA	ND (0.0749)	ND (0.0758)	ND (0.067)	ND (0.0771)	NA	NA	NA
Benzene	--	33	0.025	0.025	NA	NA	ND (0.0015)	ND (0.00152)	ND (0.00134)	ND (0.00154)	NA	NA	NA
2-Butanone	--	120000	6.1	15	NA	NA	ND (0.15)	ND (0.152)	ND (0.134)	ND (0.154)	NA	NA	NA
Chloroform	--	34	0.023	0.023	NA	NA	ND (0.00375)	ND (0.00379)	ND (0.00335)	ND (0.00386)	NA	NA	NA
Cumene	--	--	--	--	NA	NA	ND (0.00375)	ND (0.00379)	ND (0.00335)	ND (0.00386)	NA	NA	NA
p-Cymene	--	--	--	--	NA	NA	ND (0.00749)	ND (0.00758)	ND (0.0067)	ND (0.00771)	NA	NA	NA
1,2-Dichlorobenzene	--	7800	1	1	NA	NA	ND (0.00749)	ND (0.00758)	ND (0.0067)	ND (0.00771)	NA	NA	NA
1,4-Dichlorobenzene	--	280	0.2	0.2	NA	NA	ND (0.00749)	ND (0.00758)	ND (0.0067)	ND (0.00771)	NA	NA	NA
1,2-Dichloroethane	--	45	0.007	0.031	NA	NA	ND (0.00375)	ND (0.00379)	ND (0.00335)	ND (0.00386)	NA	NA	NA
Ethyl Benzene	--	540	0.43	0.43	NA	NA	ND (0.00375)	ND (0.00379)	ND (0.00335)	ND (0.00386)	NA	NA	NA
Methyl tert-butyl ether	--	4100	0.028	2.5	NA	NA	ND (0.0015)	ND (0.00152)	ND (0.00134)	ND (0.00154)	NA	NA	NA
Methylene Chloride	--	490	0.12	0.19	NA	NA	ND (0.0375)	ND (0.0379)	ND (0.0335)	ND (0.0386)	NA	NA	NA
Propylbenzene	--	--	--	--	NA	NA	ND (0.00749)	ND (0.00758)	ND (0.0067)	ND (0.00771)	NA	NA	NA
Tetrachloroethene	--	33	0.08	0.08	NA	NA	ND (0.00375)	ND (0.00379)	ND (0.00335)	ND (0.00386)	NA	NA	NA
Toluene	--	4700	3.2	10	NA	0.00466 B ; J (0.00606)	ND (0.00749)	0.0487	0.00419 J	0.0276	NA	NA	NA
1,2,3-Trimethylbenzene	--	--	--	--	NA	NA	ND (0.00749)	ND (0.00758)	ND (0.0067)	ND (0.00771)	NA	NA	NA
1,2,4-Trimethylbenzene	--	--	--	--	NA	NA	ND (0.00749)	ND (0.00758)	ND (0.0067)	ND (0.00771)	NA	NA	NA
1,3,5-Trimethylbenzene	--	--	--	--	NA	NA	ND (0.00749)	ND (0.00758)	ND (0.0067)	ND (0.00771)	NA	NA	NA
Xylenes (total)	--	2400	2.1	10	NA	NA	ND (0.00974)	ND (0.00986)	ND (0.00871)	0.00193 J	NA	NA	NA
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	NA	NA	ND (0.00749)	0.187	ND (0.00702)	0.00277 J	NA	NA	NA
Acenaphthylene	0.64	--	6.4	6.4	NA	0.0044 J (0.00664)	ND (0.00749)	ND (0.00754)	ND (0.00702)	ND (0.00763)	NA	NA	NA
Anthracene	1.1	50000	1.9	1.9	NA	0.00789 (0.00664)	ND (0.00749)	0.368 J	ND (0.00702)	ND (0.00763)	NA	0.0112 (0.00622)	NA
Benzo(a)anthracene	1.6	110	10	10	NA	0.0348 (0.00664)	ND (0.00749)	2.3	ND (0.00702)	0.0278	NA	0.0178 (0.00622)	NA
Benzo(a)pyrene	1.6	11	5.7	5.7	NA	0.0456 (0.00664)	ND (0.00749)	2.84	ND (0.00702)	0.0308	NA	0.0211 (0.00622)	NA
Benzo(b)fluoranthene	--	110	5.4	75	NA	0.053 (0.00664)	ND (0.00749)	2.46	ND (0.00702)	0.0388	NA	0.0267 (0.00622)	NA
Benzo(g,h,i)perylene	--	--	27	27	NA	0.0476 (0.00664)	ND (0.00749)	1.03	0.0026 J	0.0154	NA	0.0231 (0.00622)	NA
Benzo(k)fluoranthene	--	910	4.8	39	NA	0.0156 (0.00664)	ND (0.00749)	0.958	ND (0.00702)	0.0142	NA	0.00771 (0.00622)	NA
Chrysene	2.8	9100	2.2	10	NA	0.0386 (0.00664)	ND (0.00749)	2.92	ND (0.00702)	0.0374	NA	0.0198 (0.00622)	NA
Dibenz(a,h)anthracene	0.26	11	29	390	NA	0.00947 (0.00664)	ND (0.00749)	0.304	ND (0.00702)	0.00391 J	NA	0.00478 J (0.00622)	NA
Fluoranthene	5.1	6700	86	86	NA	0.0609 (0.00664)	ND (0.00749)	1.91	ND (0.00702)	0.0322	0.00349 J (0.00773)	0.0265 (0.00622)	NA
Fluorene	0.54	6700	6	6	NA	0.00481 J (0.00664)	ND (0.00749)	0.107 J	ND (0.00702)	ND (0.00763)	NA	NA	NA
Indeno(1,2,3-cd)pyrene	--	110	16	32	NA	0.0332 (0.00664)	ND (0.00749)	1.06	ND (0.00702)	0.0128	NA	0.0181 (0.00622)	NA
1-Methylnaphthalene	--	--	--	--	NA	NA	ND (0.025)	0.0257	ND (0.0234)	ND (0.0254)	NA	NA	NA
2-Methylnaphthalene	0.67	670	0.88	0.88	NA	0.00639 J (0.0221)	ND (0.025)	0.0397	ND (0.0234)	ND (0.0254)	NA	NA	NA
Naphthalene	2.1	400	0.042	1.2	NA	0.0114 J (0.0221)	ND (0.0187)	0.115 J	ND (0.0168)	ND (0.0193)	NA	0.00443 J (0.0207)	NA
Phenanthrene	1.5	--	11	11	0.00381 J (0.00956)	0.0373 (0.00664)	ND (0.00749)	0.539	ND (0.00702)	0.0108	0.00327 J (0.00773)	0.0138 (0.00622)	NA
Phenol	--	98000	0.16	18	0.032 J (0.531)	NA	ND (0.416)	ND (4.19)	ND (0.39)	ND (2.12)	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	950	190	640	0.0751 J (0.531)	NA	0.0763 J	ND (4.19 J3; J5)	ND (0.39)	ND (2.12)	0.325 J (0.429)	0.536 J (3.45)	NA
Butylbenzylphthalate	--	--	--	--	NA	NA	ND (0.416)	ND (4.19)	ND (0.39)	ND (2.12)	NA	NA	NA
Di-n-butylphthalate	--	--	--	--	NA	NA	ND (0.416)	ND (4.19)	ND (0.39)	ND (2.12)	NA	NA	NA
Di-n-octylphthalate	--	--	--	--	NA	NA	ND (0.416)	ND (4.19)	ND (0.39)	ND (2.12)	NA	NA	NA
Pyrene	2.6	5000	45	45	NA	0.0686 (0.00664)	ND (0.00749)	3.13	ND (0.00702)	0.0427	0.00268 J (0.00773)	0.0284 (0.00622)	NA
Pesticides													
Aldrin	--	1	8.4	8.4	NA	NA	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA
Chlordane (total)	0.0048	14	23	23	NA	0.349 P (0.332)	ND (0.375)	ND (0.377)	ND (0.351)	ND (0.381)	NA	NA	NA
alpha-Chlordane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	--	81	65	65	NA	0.0205 J (0.0221)	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA
4,4'-DDE	--	57	29	29	NA	0.00638 J (0.0221)	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA
4,4'-DDT	--	57	5.6	5.6	NA	0.0342 (0.0221)	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA
Dieldrin	0.0043	1.1	0.00046	0.0063	NA	**0.00676 J (0.0221)**	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA
Endosulfan II	--	--	--	--	NA	NA	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA
Endrin	--	74	0.0076	0.0076	NA	NA	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA
Heptachlor epoxide	--	1.9	0.00018	0.006	NA	NA	ND (0.025)	ND (0.0251)	ND (0.0234)	ND (0.0254)	NA	NA	NA

Attachment A
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Soil Sampling Analytical Results
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Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SEC C WEST 10 SEC C WEST 10 BOTTOM -- 5/4/2021	SEC C WEST 10 SEC C WEST 10 TOP 3.0 - 4.0 5/4/2021	SEC C WEST 11 SEC C WEST 11 BOTTOM -- 5/5/2021	SEC C WEST 11 SEC C WEST 11 TOP 3.0 - 4.0 5/5/2021	SEC C WEST 12 SEC C WEST 12 BOTTOM -- 5/5/2021	SEC C WEST 12 SEC C WEST 12 TOP 3.0 - 4.0 5/5/2021	SEC C WEST 9 SEC C WEST 9 BOTTOM -- 5/4/2021	SEC C WEST 9 SEC C WEST 9 TOP 3.0 - 4.0 5/4/2021	SP S/S Composites SP-10 -- 5/21/2014 Composite
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	1.9 J (6.37)	65.4 J (221)	2.02 J	47.4 J	4.07 J	8.15 J	1.97 J (5.15)	42.5 (41.5)	NA
Gasoline Range Organics	--	1800	1100	4900	NA	NA	ND (0.125)	ND (0.126)	ND (0.117)	ND (0.127)	NA	0.0684 J (0.104)	NA
Motor Oil	--	54000	--	--	NA	505 (221)	7.02	167 J	34.9	45.8	5.33 (5.15)	365 (41.5)	NA
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	NA	NA	ND (0.0212)	ND (0.0214)	ND (0.0199)	ND (0.0216)	NA	NA	NA
Aroclor-1260	--	--	--	--	NA	0.129 P (0.0188)	0.0257	0.0431	0.0185 J; P	0.0271 P	0.0508 (0.0219)	0.0906 (0.0176)	NA
PCBs (total)	0.18	5.5	330	330	NA	0.129 P (0.0188)	0.0257	0.0431	0.0185 J; P	0.0271 P	0.0508 (0.0219)	0.0906 (0.0176)	NA
Metals													
Antimony	--	50	--	--	NA	NA	ND (2.5)	ND (2.51)	ND (2.34)	0.79 J	NA	0.733 J (2.07)	NA
Arsenic	0.07	0.98	--	--	4.65 (3.19)	6.28 (2.21)	20	9.15	3.99	7.56	2.73 (2.58)	4.45 (2.07)	NA
Barium	--	3000	--	--	353 (0.797)	193 (0.553)	304	404	153	1410	206 (0.644)	165 (0.519)	NA
Beryllium	--	27	--	--	0.332 (0.319)	0.236 (0.221)	0.663	0.595	0.138 J	0.352	0.609 (0.258)	0.204 J (0.207)	NA
Cadmium	0.0096	51	--	--	1.23 (0.797)	2.13 (0.553)	1.58	6.02	1.14	4.65	1.29 (0.644)	2.43 (0.519)	NA
Chromium (total)	0.37	--	--	--	98.7 (1.59)	61.1 (1.11)	79.4	77	36.9	64.4	74.7 (1.29)	48.5 (1.04)	NA
Chromium VI	--	2.8	--	--	5.08 (3.19)	NA	ND (2.5)	ND (2.51)	ND (2.34)	ND (2.54)	NA	NA	NA
Cobalt	--	28	--	--	10.5 (1.59)	14.7 (1.11)	17.3	17.3	22.6	14.6	12.1 (1.29)	12.1 (1.04)	NA
Copper	0.27	14000	--	--	25.7 (3.19)	63.4 (2.21)	69.4	192	97.9	245	37.6 (2.58)	56.3 (2.07)	NA
Cyanide (total)	--	22	0.0034	0.0034	NA	NA	ND (0.312)	**0.959**	ND (0.292)	**9.09**	**0.124 J (0.322)**	**0.109 J (0.259)**	NA
Lead	0.218	160	--	--	6 (3.98)	90.4 (0.553)	37.8	163	23.1	283	18.3 (0.644)	72.8 (0.519)	110
Mercury	0.0007	44	--	--	0.0829 (0.0637)	0.207 (0.0442)	0.0924	0.135	0.116	0.439	0.0572 (0.0515)	0.182 (0.0415)	NA
Molybdenum	--	1800	--	--	4.85 (0.797)	0.436 J (0.553)	0.637	1.69	0.433 J	2.66	NA	NA	NA
Nickel	0.12	86	--	--	80.6 (3.19)	76 (2.21)	89.4	86.9	48.1	67.7	77.5 (2.58)	66.4 (2.07)	NA
Perchlorate	--	250	--	--	NA	NA	ND (0.0499)	ND (0.0503)	ND (0.0468)	ND (0.0508)	NA	NA	NA
Selenium	--	1700	--	--	2.62 J (3.19)	NA	ND (2.5)	ND (2.51)	ND (2.34)	1.09 J	NA	NA	NA
Silver	0.0037	1800	--	--	NA	0.348 J (1.11)	ND (1.25)	0.346 J	0.151 J	4.79	NA	0.28 J (1.04)	NA
Thallium	--	3.5	--	--	NA	NA	ND (2.5)	ND (2.51)	ND (2.34)	ND (2.54)	NA	NA	NA
Vanadium	--	470	--	--	156 (3.19)	69.5 (2.21)	85.4	64.3	101	53.3	73.6 (2.58)	54.2 (2.07)	NA
Zinc	0.41	110000	--	--	65.4 (7.97)	256 (5.53)	147	349	79.7	365	78 (6.44)	137 (5.19)	NA

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
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Location	**Wetland Foundation Material Conc Guidelines**	**Soil Direct Exposure Construction Worker ESLs**	**Soil Leaching to GW, Drinking Water ESLs**	**Soil Leaching to GW, Non-Drinking Water ESLs**	**SP S/S Composites**	**SP S/S Composites**	**SP S/S Composites**	**SP-01**	**SP-01**	**SP-03**	**SP-03**	**SP-04**	**SP-04**
Field Sample ID					**SP-12.5**	**SP-15**	**SP-7.5**	**SP1-2'**	**SP1-7'**	**SP3-2'**	**SP3-6.5'**	**SP4-11'**	**SP4-3'**
Collection Depth (ft bgs)					**--**	**--**	**--**	**2**	**7**	**2**	**6.5**	**11**	**3**
Sample Date					**5/21/2014**	**5/21/2014**	**5/21/2014**	**11/8/2017**	**11/8/2017**	**11/8/2017**	**11/8/2017**	**11/8/2017**	**11/8/2017**
Comments					**Composite**	**Composite**	**Composite**						
Physical Parameters													
Organic Carbon (total)	--	--	--	--	17000	14000	15000	NA	NA	NA	NA	NA	NA
pH (Laboratory Analysis) [SU]	--	--	--	--	12.4	12.3	12.4	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Acetone	--	270000	0.92	0.92	NA	NA	NA	ND (0.02)	ND (0.018)	ND (0.018)	ND (0.017)	0.033	ND (0.019)
Benzene	--	33	0.025	0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	--	120000	6.1	15	NA	NA	NA	ND (0.0098)	ND (0.0089)	ND (0.0089)	ND (0.0085)	0.0039 J	ND (0.0093)
Chloroform	--	34	0.023	0.023	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cumene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	--	7800	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	--	280	0.2	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	--	45	0.007	0.031	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	--	540	0.43	0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	--	4100	0.028	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	--	490	0.12	0.19	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	--	33	0.08	0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	--	4700	3.2	10	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	--	2400	2.1	10	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds													
Acenaphthene	0.5	10000	12	12	NA	NA	NA	ND (6.6)	0.077 J	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Acenaphthylene	0.64	--	6.4	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1.1	50000	1.9	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.6	110	10	10	NA	NA	NA	ND (6.6)	0.87	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Benzo(a)pyrene	1.6	11	5.7	5.7	NA	NA	NA	ND (6.6)	1.3	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Benzo(b)fluoranthene	--	110	5.4	75	NA	NA	NA	ND (6.6)	1.2	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Benzo(g,h,i)perylene	--	--	27	27	NA	NA	NA	ND (6.6)	0.6	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Benzo(k)fluoranthene	--	910	4.8	39	NA	NA	NA	ND (6.6)	0.49	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Chrysene	2.8	9100	2.2	10	NA	NA	NA	ND (6.6)	1.3	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Dibenz(a,h)anthracene	0.26	11	29	390	NA	NA	NA	ND (6.6)	0.18 J	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Fluoranthene	5.1	6700	86	86	NA	NA	NA	ND (6.6)	1	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Fluorene	0.54	6700	6	6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	--	110	16	32	NA	NA	NA	ND (6.6)	0.55	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
1-Methylnaphthalene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	0.67	670	0.88	0.88	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	2.1	400	0.042	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1.5	--	11	11	NA	NA	NA	ND (6.6)	0.26 J	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Phenol	--	98000	0.16	18	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	950	190	640	NA	NA	NA	ND (33)	ND (2.3)	2.2 J	ND (17)	ND (3.3)	ND (17)
Butylbenzylphthalate	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	2.6	5000	45	45	NA	NA	NA	ND (6.6)	1.2	ND (3.4)	ND (3.3)	ND (0.66)	ND (3.3)
Pesticides													
Aldrin	--	1	8.4	8.4	NA	NA	NA	ND (0.043)	ND (0.0084)	ND (0.017)	ND (0.017)	ND (0.0085)	ND (0.017)
Chlordane (total)	0.0048	14	23	23	NA	NA	NA	0.024 J	ND (0.0084)	0.028C	ND (0.017)	ND (0.0085)	0.0068 J
alpha-Chlordane	--	--	--	--	NA	NA	NA	0.028C J	ND (0.0084)	0.014C J	0.013C J	ND (0.0085)	0.0065C J
4,4'-DDD	--	81	65	65	NA	NA	NA	0.041C J	ND (0.016)	ND (0.033)	ND (0.033)	ND (0.017)	ND (0.033)
4,4'-DDE	--	57	29	29	NA	NA	NA	ND (0.083)	ND (0.016)	ND (0.033)	ND (0.033)	0.0088C J	ND (0.033)
4,4'-DDT	--	57	5.6	5.6	NA	NA	NA	0.083	ND (0.016)	0.027C J	0.03C J	ND (0.017)	0.027C J
Dieldrin	0.0043	1.1	0.00046	0.0063	NA	NA	NA	ND (0.043)	ND (0.0084)	**0.0085 J**	ND (0.017)	**0.012C**	**0.0074 J**
Endosulfan II	--	--	--	--	NA	NA	NA	ND (0.083)	ND (0.016)	ND (0.033)	ND (0.033)	0.0081 J	ND (0.033)
Endrin	--	74	0.0076	0.0076	NA	NA	NA	ND (0.083)	ND (0.016)	ND (0.033)	ND (0.033)	ND (0.017)	ND (0.033)
Heptachlor epoxide	--	1.9	0.00018	0.006	NA	NA	NA	ND (0.043)	ND (0.0084)	0.0053 J	0.0056 J	0.004C J	0.0031 J

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SP S/S Composites SP-12.5 -- 5/21/2014 Composite	SP S/S Composites SP-15 -- 5/21/2014 Composite	SP S/S Composites SP-7.5 -- 5/21/2014 Composite	SP-01 SP1-2' 2 11/8/2017	SP-01 SP1-7' 7 11/8/2017	SP-03 SP3-2' 2 11/8/2017	SP-03 SP3-6.5' 6.5 11/8/2017	SP-04 SP4-11' 11 11/8/2017	SP-04 SP4-3' 3 11/8/2017
Petroleum Hydrocarbons													
Diesel Range Organics	--	1100	1100	7300	NA	NA	NA	98 Y	19 Y	77 Y	110 Y	130 Y	46 Y
Gasoline Range Organics	--	1800	1100	4900	NA	NA	NA	0.2 J	0.18 J	0.15 J	0.19 J	0.92 J	0.26 J
Motor Oil	--	54000	--	--	NA	NA	NA	800	100	810	610	610	430
Polychlorinated Biphenyls													
Aroclor-1254	--	--	--	--	NA	NA	NA	0.11	ND (0.0066)	0.1	0.13	0.39	0.087
Aroclor-1260	--	--	--	--	NA	NA	NA	0.22	0.014	0.16	0.13	0.58	0.17
PCBs (total)	0.18	5.5	330	330	NA	NA	NA	0.33	0.014	0.26	0.26	0.97	0.257
Metals													
Antimony	--	50	--	--	NA	NA	NA	0.84 J	0.56 J	1.1 J	0.72 J	0.71 J	0.8 J
Arsenic	0.07	0.98	--	--	NA	NA	NA	6.5	5.5	7.3	5.6	6	7.2
Barium	--	3000	--	--	NA	NA	NA	190	180	190	150	230	240
Beryllium	--	27	--	--	NA	NA	NA	0.43	0.48	0.45	0.43	0.47	0.39
Cadmium	0.0096	51	--	--	NA	NA	NA	2.7	1.1	3.1	1.8	6.7	2.3
Chromium (total)	0.37	--	--	--	NA	NA	NA	64	41	56	48	56	50
Chromium VI	--	2.8	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	28	--	--	NA	NA	NA	12	8.6	13	11	11	10
Copper	0.27	14000	--	--	NA	NA	NA	63	29	71	88	98	67
Cyanide (total)	--	22	0.0034	0.0034	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.218	160	--	--	110	140	130	98	28	180	87	370	120
Mercury	0.0007	44	--	--	NA	NA	NA	0.16	0.14	0.19	0.21	0.16	0.18
Molybdenum	--	1800	--	--	NA	NA	NA	1.1	0.74	0.88	0.72	0.99	0.79
Nickel	0.12	86	--	--	NA	NA	NA	70	44	66	58	51	60
Perchlorate	--	250	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	--	1700	--	--	NA	NA	NA	0.53 J	0.44 J	0.85 J	0.68 J	0.84 J	0.46 J
Silver	0.0037	1800	--	--	NA	NA	NA	1	0.68	0.6	0.3	0.67	0.32
Thallium	--	3.5	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	--	470	--	--	NA	NA	NA	51	34	59	51	49	46
Zinc	0.41	110000	--	--	NA	NA	NA	190	82	180	150	180	190

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria.
These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SP-04	SP-06	SP-06	Stockpile Control
Field Sample ID					SP4-7'	SP6-2'	SP6-7.5'	Stockpile Control
Collection Depth (ft bgs)					7	2	7.5	--
Sample Date					11/8/2017	11/8/2017	11/8/2017	5/21/2014
Comments								Composite
Physical Parameters								
Organic Carbon (total)	--	--	--	--	NA	NA	NA	16000
pH (Laboratory Analysis) [SU]	--	--	--	--	NA	NA	NA	8.15
Volatile Organic Compounds								
Acetone	--	270000	0.92	0.92	ND (0.019)	ND (0.02)	0.0076 J	NA
Benzene	--	33	0.025	0.025	NA	NA	NA	NA
2-Butanone	--	120000	6.1	15	ND (0.0094)	ND (0.0099)	ND (0.0097)	NA
Chloroform	--	34	0.023	0.023	NA	NA	NA	NA
Cumene	--	--	--	--	NA	NA	NA	NA
p-Cymene	--	--	--	--	NA	NA	NA	NA
1,2-Dichlorobenzene	--	7800	1	1	NA	NA	NA	NA
1,4-Dichlorobenzene	--	280	0.2	0.2	NA	NA	NA	NA
1,2-Dichloroethane	--	45	0.007	0.031	NA	NA	NA	NA
Ethyl Benzene	--	540	0.43	0.43	NA	NA	NA	NA
Methyl tert-butyl ether	--	4100	0.028	2.5	NA	NA	NA	NA
Methylene Chloride	--	490	0.12	0.19	NA	NA	NA	NA
Propylbenzene	--	--	--	--	NA	NA	NA	NA
Tetrachloroethene	--	33	0.08	0.08	NA	NA	NA	NA
Toluene	--	4700	3.2	10	NA	NA	NA	NA
1,2,3-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA
1,2,4-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA
1,3,5-Trimethylbenzene	--	--	--	--	NA	NA	NA	NA
Xylenes (total)	--	2400	2.1	10	NA	NA	NA	NA
Semivolatile Organic Compounds								
Acenaphthene	0.5	10000	12	12	ND (0.47)	ND (3.3)	ND (0.27)	NA
Acenaphthylene	0.64	--	6.4	6.4	NA	NA	NA	NA
Anthracene	1.1	50000	1.9	1.9	NA	NA	NA	NA
Benzo(a)anthracene	1.6	110	10	10	ND (0.47)	ND (3.3)	0.37	NA
Benzo(a)pyrene	1.6	11	5.7	5.7	ND (0.47)	ND (3.3)	0.5	NA
Benzo(b)fluoranthene	--	110	5.4	75	ND (0.47)	ND (3.3)	0.45	NA
Benzo(g,h,i)perylene	--	--	27	27	ND (0.47)	ND (3.3)	0.23 J	NA
Benzo(k)fluoranthene	--	910	4.8	39	ND (0.47)	ND (3.3)	0.21 J	NA
Chrysene	2.8	9100	2.2	10	ND (0.47)	ND (3.3)	0.52	NA
Dibenz(a,h)anthracene	0.26	11	29	390	ND (0.47)	ND (3.3)	ND (0.27)	NA
Fluoranthene	5.1	6700	86	86	ND (0.47)	ND (3.3)	0.41	NA
Fluorene	0.54	6700	6	6	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	--	110	16	32	ND (0.47)	ND (3.3)	0.21 J	NA
1-Methylnaphthalene	--	--	--	--	NA	NA	NA	NA
2-Methylnaphthalene	0.67	670	0.88	0.88	NA	NA	NA	NA
Naphthalene	2.1	400	0.042	1.2	NA	NA	NA	NA
Phenanthrene	1.5	--	11	11	ND (0.47)	ND (3.3)	0.12 J	NA
Phenol	--	98000	0.16	18	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	950	190	640	ND (2.4)	ND (17)	ND (1.3)	NA
Butylbenzylphthalate	--	--	--	--	NA	NA	NA	NA
Di-n-butylphthalate	--	--	--	--	NA	NA	NA	NA
Di-n-octylphthalate	--	--	--	--	NA	NA	NA	NA
Pyrene	2.6	5000	45	45	ND (0.47)	ND (3.3)	0.47	NA
Pesticides								
Aldrin	--	1	8.4	8.4	0.0034C J	ND (0.043)	ND (0.0084)	NA
Chlordane (total)	0.0048	14	23	23	0.014C	0.076	ND (0.0084)	NA
alpha-Chlordane	--	--	--	--	0.0034C J	0.044C	ND (0.0084)	NA
4,4'-DDD	--	81	65	65	ND (0.016)	0.23 # B	ND (0.016)	NA
4,4'-DDE	--	57	29	29	ND (0.016)	0.036 J	0.0069 J	NA
4,4'-DDT	--	57	5.6	5.6	ND (0.016)	0.2	0.03	NA
Dieldrin	0.0043	1.1	0.00046	0.0063	**0.0084C J**	**0.051C**	ND (0.0084)	NA
Endosulfan II	--	--	--	--	0.0035C J	ND (0.084)	ND (0.016)	NA
Endrin	--	74	0.0076	0.0076	**0.0087C J**	ND (0.084)	ND (0.016)	NA
Heptachlor epoxide	--	1.9	0.00018	0.006	0.004 J	ND (0.043)	ND (0.0084)	NA

Attachment A
Table A-1
Soil Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	SP-04 SP4-7' 7 11/8/2017	SP-06 SP6-2' 2 11/8/2017	SP-06 SP6-7.5' 7.5 11/8/2017	Stockpile Control Stockpile Control -- 5/21/2014 Composite
Petroleum Hydrocarbons								
Diesel Range Organics	--	1100	1100	7300	46 Y	150 Y	35 Y	NA
Gasoline Range Organics	--	1800	1100	4900	0.16 J	0.19 J	0.21 J	NA
Motor Oil	--	54000	--	--	340	1200	160	NA
Polychlorinated Biphenyls								
Aroclor-1254	--	--	--	--	0.19	ND (0.0067)	ND (0.0048)	NA
Aroclor-1260	--	--	--	--	0.57	0.099	0.048	NA
PCBs (total)	0.18	5.5	330	330	0.76	0.099	0.048	NA
Metals								
Antimony	--	50	--	--	0.77 J	0.82 J	1.8 J	NA
Arsenic	0.07	0.98	--	--	6.3	7.2	11	NA
Barium	--	3000	--	--	280	160	1400	NA
Beryllium	--	27	--	--	0.51	0.4	0.59	NA
Cadmium	0.0096	51	--	--	8.3	1.6	3.2	NA
Chromium (total)	0.37	--	--	--	61	53	59	NA
Chromium VI	--	2.8	--	--	NA	NA	NA	NA
Cobalt	--	28	--	--	12	9.9	12	NA
Copper	0.27	14000	--	--	94	54	310	NA
Cyanide (total)	--	22	0.0034	0.0034	NA	NA	NA	NA
Lead	0.218	160	--	--	96	86	400	290
Mercury	0.0007	44	--	--	0.62	0.24	0.14	NA
Molybdenum	--	1800	--	--	1.5	1	2.4	NA
Nickel	0.12	86	--	--	56	67	68	NA
Perchlorate	--	250	--	--	NA	NA	NA	NA
Selenium	--	1700	--	--	0.58 J	0.5 J	0.55 J	NA
Silver	0.0037	1800	--	--	0.77	0.71	0.52	NA
Thallium	--	3.5	--	--	NA	NA	NA	NA
Vanadium	--	470	--	--	42	47	45	NA
Zinc	0.41	110000	--	--	200	160	400	NA

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 #, B, C, and Y are unknown qualifiers.
4 Underlined concentrations exceed the Wetland Foundation Material Conc Guidelines.
5 Double underlined concentrations exceed the Soil Direct Exposure Construction Worker ESLs.
6 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
7 Blue boldfaced concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration
J3 The associated batch QC was outside the established quality control range for precision.
J4 The associated batch QC was outside the established quality control range for accuracy.
J5 The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1 - The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P - RPD between the primary and confirmatory analysis exceeded 40%.
P1 - RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V - The sample concentration is too high to evaluate accurate spike recoveries.

Attachment A
Table A-2
Sludge Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	C1-150	C1-250	C1-350	C2-100	C2-200	E1-100	E1-200	E1-300	E2-100	E2-200	PP-1
Field Sample ID					C1-150-120423	C1-250-120423	C1-350-120423	C2-100-120423	C2-200-120423	E1-100-120523	E1-200-120523	E1-300-120523	E2-100-120523	E2-200-120523	PP-1
Collection Depth (ft bgs)					--	--	--	--	--	--	--	--	--	--	--
Sample Date					12/4/2023	12/4/2023	12/4/2023	12/4/2023	12/4/2023	12/5/2023	12/5/2023	12/5/2023	12/5/2023	12/5/2023	5/20/2014
Pesticides	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Total Petroleum Hydrocarbons															
Diesel Range Organics	--	1100	1100	7300	250 (10)	370 (9.9)	280 (10)	1600 (99)	2000 (100)	20 (9.9)	14 (9.9)	10 (9.9)	14 (9.9)	8.7 J (9.9)	NA
Polychlorinated Biphenyls	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Metals															
Antimony	--	50	--	--	ND (2.9)	ND (3 (3))	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	0.6
Arsenic	0.07	0.98	--	--	3.2 (0.96)	4.2 (0.99)	4 (0.95)	2.7 (0.95)	3.5 (0.97)	1.6 (0.96)	1.6 (0.97)	1 (0.98)	0.86 J (0.98)	1.7 (0.95)	4.7
Barium	--	3000	--	--	380 (0.96)	310 (0.99)	290 (0.95)	360 (0.95)	390 (0.97)	190 (0.96)	83 (0.97)	47 (0.98)	88 (0.98)	180 (0.95)	210
Beryllium	--	27	--	--	ND (0.48)	ND (0.5)	ND (0.48)	ND (0.48)	ND (0.49)	ND (0.48)	ND (0.49)	ND (0.49)	ND (0.49)	ND (0.48)	0.5
Cadmium	0.0096	51	--	--	1.6 (0.48)	2.2 (0.5)	1.9 (0.48)	1.9 (0.48)	0.74 (0.49)	1.7 (0.48)	2.4 (0.49)	0.62 (0.49)	0.89 (0.49)	0.74 (0.48)	3.2
Chromium (total)	0.37	--	--	--	240 (0.96)	330 (0.99)	190 (0.95)	290 (0.95)	430 (0.97)	80 (0.96)	34 (0.97)	21 (0.98)	33 (0.98)	69 (0.95)	160
Cobalt	--	28	--	--	3.7 (0.48)	3.8 (0.5)	3.9 (0.48)	3.2 (0.48)	3.5 (0.49)	2.5 (0.48)	2.6 (0.49)	1.6 (0.49)	1.6 (0.49)	2 (0.48)	8.2
Copper	0.27	14000	--	--	200 (0.96)	200 (0.99)	140 (0.95)	190 (0.95)	190 (0.97)	110 (0.96)	54 (0.97)	32 (0.98)	48 (0.98)	84 (0.95)	69
Lead	0.218	160	--	--	650 (0.96)	820 (0.99)	470 (0.95)	840 (0.95)	1600 (24)	230 (0.96)	110 (0.97)	60 (0.98)	97 (0.98)	180 (0.95)	410
Mercury	0.0007	44	--	--	1.2 (0.15)	1.3 (0.15)	1 (0.16)	1.3 (0.16)	1.5 (0.16)	0.6 (0.16)	0.28 (0.16)	0.14 J (0.15)	0.3 (0.15)	0.44 (0.16)	0.37
Molybdenum	--	1800	--	--	13 (0.96)	21 (0.99)	10 (0.95)	20 (0.95)	24 (0.97)	11 (0.96)	7.3 (0.97)	7.2 (0.98)	9.2 (0.98)	7.7 (0.95)	12
Nickel	0.12	86	--	--	43 (0.96)	48 (0.99)	37 (0.95)	39 (0.95)	47 (0.97)	24 (0.96)	21 (0.97)	13 (0.98)	14 (0.98)	19 (0.95)	64
Selenium	--	1700	--	--	1.8 J (2.9)	1.5 J (3)	1.8 J (2.9)	1.6 J (2.9)	1.4 J (2.9)	1.1 J (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	0.96 J (2.9)	0.5
Silver	0.0037	1800	--	--	14 (0.48)	15 (0.5)	15 (0.48)	20 (0.48)	12 (0.49)	15 (0.48)	8.1 (0.49)	4 (0.49)	6.9 (0.49)	9.6 (0.48)	6.2
Thallium	--	3.5	--	--	0.97 J (2.9)	1 J (3)	0.83 J (2.9)	0.85 J (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	ND (2.9)	0.5
Vanadium	--	470	--	--	8.9 (0.96)	9.4 (0.99)	8.1 (0.95)	8.6 (0.95)	11 (0.97)	5.1 (0.96)	3.8 (0.97)	2.7 (0.98)	3 (0.98)	4.5 (0.95)	34
Zinc	0.41	110000	--	--	520 (4.8)	470 (5)	330 (4.8)	500 (4.8)	600 (4.9)	260 (4.8)	140 (4.9)	74 (4.9)	120 (4.9)	200 (4.8)	260

Notes:

1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 Underlined concentrations exceed the Wetland Foundation Material Concentration Guidelines.
4 Double underlined concentrations exceed the Soil Direct Exposure for Construction Worker ESLs.
5 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
6 No concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:

ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Attachment A
Table A-2
Sludge Sampling Analytical Results
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

Location Field Sample ID Collection Depth (ft bgs) Sample Date	Wetland Foundation Material Conc Guidelines	Soil Direct Exposure Construction Worker ESLs	Soil Leaching to GW, Drinking Water ESLs	Soil Leaching to GW, Non-Drinking Water ESLs	PP-2 PP-2 -- 5/20/2014	PP-3 PP-3 -- 5/20/2014	PP-4 PP-4 -- 5/20/2014	S/S Study Sludge Control -- 5/12/2014
Pesticides	--	--	--	--	NA	NA	NA	NA
Total Petroleum Hydrocarbons								
Diesel Range Organics	--	1100	1100	7300	NA	NA	NA	NA
Polychlorinated Biphenyls	--	--	--	--	NA	NA	NA	NA
Metals								
Antimony	--	50	--	--	0.5	0.5	0.87	NA
Arsenic	0.07	0.98	--	--	4.2	3.4	1.4	NA
Barium	--	3000	--	--	120	73	180	NA
Beryllium	--	27	--	--	0.5	0.5	0.5	NA
Cadmium	0.0096	51	--	--	1.3	3	2.6	NA
Chromium (total)	0.37	--	--	--	99	41	290	NA
Cobalt	--	28	--	--	6.1	6.2	1.9	NA
Copper	0.27	14000	--	--	46	38	160	NA
Lead	0.218	160	--	--	240	82	760	470
Mercury	0.0007	44	--	--	0.24	0.14	0.68	NA
Molybdenum	--	1800	--	--	4.2	5.8	18	NA
Nickel	0.12	86	--	--	48	43	63	NA
Selenium	--	1700	--	--	0.5	0.69	0.58	NA
Silver	0.0037	1800	--	--	3.1	2.4	9.6	NA
Thallium	--	3.5	--	--	0.5	0.5	0.5	NA
Vanadium	--	470	--	--	36	23	5.1	NA
Zinc	0.41	110000	--	--	160	110	510	NA

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 Underlined concentrations exceed the Wetland Foundation Material Concentration Guidelines.
4 Double underlined concentrations exceed the Soil Direct Exposure for Construction Worker ESLs.
5 Gray-shaded concentrations exceed the Soil Leaching to GW, Drinking Water ESLs.
6 No concentrations exceed the Soil Leaching to GW, Non-Drinking Water ESLs.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Attachment B

Upper Confidence Limit Calculations – ProUCL Input and Output

Attachment B
Table 1
ProUCL Input
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

As_ExpConc	D_As_ExpConc	BaP_ExpConc	D_BaP_ExpConc	PCB_ExpConc	D_PCB_ExpConc	Pb_SO_ExpConc	D_Pb_SO_ExpConc	Pb_Sludge_ExpConc	D_Pb_Sludge_ExpConc	Pb_ExpConc	D_Pb_ExpConc
5.54	1	0.00702	1	0.51	0	161	1	650	1	161	1
4.16	1	0.0297	1	0.51	0	166	1	820	1	166	1
6.88	1	0.0136	1	0.5	0	167	1	470	1	167	1
7.61	1	0.00777	1	0.49	0	97.1	1	840	1	97.1	1
6.31	1	0.0164	1	0.5	0	189	1	1600	1	189	1
13.2	1	0.0183	1	0.26	0	98.4	1	230	1	98.4	1
3.5	1	0.0132	1	0.26	0	130	1	110	1	130	1
4.23	1	0.00993	1	0.25	0	179	1	60	1	179	1
6.34	1	0.00565	1	0.25	0	327	1	97	1	327	1
15.6	1	0.0082	1	0.25	0	137	1	180	1	137	1
7.56	1	0.031	1	0.0373	0	137	1	410	1	137	1
3.72	1	0.0135	1	0.0409	0	75.3	1	240	1	75.3	1
13.4	1	0.0182	1	0.0378	0	1780	1	82	1	1780	1
5.29	1	0.0321	1	0.417	1	257	1	760	1	257	1
4.65	1	0.0147	1	0.266	1	87.1	1			87.1	1
5.18	1	0.00368	1	2.86	1	124	1			124	1
7.8	1	0.00739	1	0.166	1	332	1			332	1
4.69	1	0.00853	1	0.23	1	142	1			142	1
4.66	1	0.0916	1	0.43	1	106	1			106	1
5.45	1	0.0287	1	0.464	1	147	1			147	1
5.54	1	0.0467	1	0.831	1	403	1			403	1
5.88	1	0.043	1	0.604	1	151	1			151	1
7.36	1	0.0163	1	1.67	1	770	1			770	1
5.98	1	0.0293	1	0.316	1	197	1			197	1
5.36	1	0.0385	1	0.99	1	498	1			498	1
5.73	1	0.0151	1	0.937	1	192	1			192	1
4.1	1	0.0273	1	0.212	1	260	1			260	1
3	1	0.0866	1	0.411	1	1200	1			1200	1
11	1	0.056	1	0.239	1	310	1			310	1
1.9	0	0.0378	1	0.246	1	45	1			45	1
3.9	1	0.0239	1	0.18	1	90	1			90	1
1.8	0	0.0758	1	0.357	1	79	1			79	1
9.43	1	0.0382	1	0.0862	1	274	1			274	1
11	1	0.0422	1	0.212	1	1200	1			1200	1
4.7	1	0.542	1	0.514	1	52.5	1			52.5	1
4.91	1	0.00743	1	0.313	1	242	1			242	1
6.49	1	0.0229	1	0.243	1	350	1			350	1
10.6	1	0.0145	1	0.476	1	696	1			696	1
7.12	1	0.124	1	0.0873	1	279	1			279	1
7.89	1	0.0534	1	6.69	1	468	1			468	1
5.88	1	0.142	1	0.415	1	175	1			175	1
4.4	1	0.0379	1	0.285	1	109	1			109	1
3.52	1	0.127	1	0.918	1	64.5	1			64.5	1
5.64	1	0.0136	1	0.3	1	69.9	1			69.9	1
4.43	1	0.022	1	1.18	1	264	1			264	1
5.14	1	0.0251	1	0.158	1	455	1			455	1
3.51	1	0.0456	1	0.112	1	112	1			112	1
4.2	1	2.84	1	0.0752	1	91.3	1			91.3	1
3.25	1	0.0308	1	0.125	1	85.9	1			85.9	1
3.75	1	0.0211	1	1.03	1	70	1			70	1
3.81	1	1.3	1	1.28	1	120	1			120	1
5.33	1	3.4	0	1.63	1	3060	1			3060	1
6.28	1	3.3	0	0.42	1	90.4	1			90.4	1
20	1	0.5	1	0.114	1	163	1			163	1
7.56	1			0.238	1	283	1			283	1
4.45	1			0.0879	1	72.8	1			72.8	1
6.5	1			0.129	1	98	1			98	1
7.3	1			0.0431	1	180	1			180	1
7.2	1			0.0271	1	370	1			370	1
11	1			0.0906	1	400	1			400	1
				0.33	1					650	1
				0.26	1					820	1
				0.97	1					470	1
				0.099	1					840	1
										1600	1
										230	1
										110	1
										60	1
										97	1
										180	1
										410	1
										240	1
										82	1
										760	1

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A–E	F	G–K	L
1	**UCL Statistics for Data Sets with Non-Detects**			
2				
3	User Selected Options			
4	Date/Time of Computation	ProUCL 5.2 1/31/2024 9:41:14 AM		
5	From File	20240131_SanLeando_Soil_ProUCL_Input_k.xls		
6	Full Precision	OFF		
7	Confidence Coefficient	95%		
8	Number of Bootstrap Operations	2000		
9				
10	As_ExpConc			
11				
12	**General Statistics**			
13	Total Number of Observations	60	Number of Distinct Observations	55
14	Number of Detects	58	Number of Non-Detects	2
15	Number of Distinct Detects	53	Number of Distinct Non-Detects	2
16	Minimum Detect	3	Minimum Non-Detect	1.8
17	Maximum Detect	20	Maximum Non-Detect	1.9
18	Variance Detects	10.45	Percent Non-Detects	3.333%
19	Mean Detects	6.533	SD Detects	3.233
20	Median Detects	5.59	CV Detects	0.495
21	Skewness Detects	2.047	Kurtosis Detects	5.118
22	Mean of Logged Detects	1.786	SD of Logged Detects	0.409
23				
24	**Normal GOF Test on Detects Only**			
25	Shapiro Wilk Test Statistic	0.804	**Normal GOF Test on Detected Observations Only**	
26	1% Shapiro Wilk P Value	4.323E-10	Detected Data Not Normal at 1% Significance Level	
27	Lilliefors Test Statistic	0.182	**Lilliefors GOF Test**	
28	1% Lilliefors Critical Value	0.134	Detected Data Not Normal at 1% Significance Level	
29	**Detected Data Not Normal at 1% Significance Level**			
30				
31	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**			
32	KM Mean	6.375	KM Standard Error of Mean	0.425
33	90KM SD	3.263	95% KM (BCA) UCL	7.141
34	95% KM (t) UCL	7.085	95% KM (Percentile Bootstrap) UCL	7.11
35	95% KM (z) UCL	7.074	95% KM Bootstrap t UCL	7.255
36	90% KM Chebyshev UCL	7.65	95% KM Chebyshev UCL	8.228
37	97.5% KM Chebyshev UCL	9.029	99% KM Chebyshev UCL	10.6
38				
39	**Gamma GOF Tests on Detected Observations Only**			
40	A-D Test Statistic	1.452	**Anderson-Darling GOF Test**	
41	5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
42	K-S Test Statistic	0.121	**Kolmogorov-Smirnov GOF**	
43	5% K-S Critical Value	0.117	Detected Data Not Gamma Distributed at 5% Significance Level	
44	**Detected Data Not Gamma Distributed at 5% Significance Level**			
45				
46	**Gamma Statistics on Detected Data Only**			
47	k hat (MLE)	5.648	k star (bias corrected MLE)	5.367

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A B C D E	F	G H I J K	L
48	Theta hat (MLE)	1.157	Theta star (bias corrected MLE)	1.217
49	nu hat (MLE)	655.1	nu star (bias corrected)	622.6
50	Mean (detects)	6.533		
51				
52	**Gamma ROS Statistics using Imputed Non-Detects**			
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs			
56	This is especially true when the sample size is small.			
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
58	Minimum	0.953	Mean	6.347
59	Maximum	20	Median	5.54
60	SD	3.334	CV	0.525
61	k hat (MLE)	4.212	k star (bias corrected MLE)	4.013
62	Theta hat (MLE)	1.507	Theta star (bias corrected MLE)	1.582
63	nu hat (MLE)	505.5	nu star (bias corrected)	481.5
64	Adjusted Level of Significance (β)	0.046		
65	Approximate Chi Square Value (481.53, α)	431.6	Adjusted Chi Square Value (481.53, β)	430.5
66	95% Gamma Approximate UCL	7.08	95% Gamma Adjusted UCL	7.099
67				
68	**Estimates of Gamma Parameters using KM Estimates**			
69	Mean (KM)	6.375	SD (KM)	3.263
70	Variance (KM)	10.65	SE of Mean (KM)	0.425
71	k hat (KM)	3.817	k star (KM)	3.637
72	nu hat (KM)	458	nu star (KM)	436.4
73	theta hat (KM)	1.67	theta star (KM)	1.753
74	80% gamma percentile (KM)	8.888	90% gamma percentile (KM)	10.86
75	95% gamma percentile (KM)	12.68	99% gamma percentile (KM)	16.58
76				
77	**Gamma Kaplan-Meier (KM) Statistics**			
78	Approximate Chi Square Value (436.42, α)	389	Adjusted Chi Square Value (436.42, β)	387.9
79	95% KM Approximate Gamma UCL	7.153	95% KM Adjusted Gamma UCL	7.173
80				
81	**Lognormal GOF Test on Detected Observations Only**			
82	Shapiro Wilk Approximate Test Statistic	0.948	**Shapiro Wilk GOF Test**	
83	10% Shapiro Wilk P Value	0.0262	Detected Data Not Lognormal at 10% Significance Level	
84	Lilliefors Test Statistic	0.0915	**Lilliefors GOF Test**	
85	10% Lilliefors Critical Value	0.106	Detected Data appear Lognormal at 10% Significance Level	
86	**Detected Data appear Approximate Lognormal at 10% Significance Level**			
87				
88	**Lognormal ROS Statistics Using Imputed Non-Detects**			
89	Mean in Original Scale	6.389	Mean in Log Scale	1.753
90	SD in Original Scale	3.272	SD in Log Scale	0.44
91	95% t UCL (assumes normality of ROS data)	7.095	95% Percentile Bootstrap UCL	7.081
92	95% BCA Bootstrap UCL	7.132	95% Bootstrap t UCL	7.23
93	95% H-UCL (Log ROS)	7.071		
94				

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A	B	C	D	E	F	G	H	I	J	K	L
95	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
96					KM Mean (logged)	1.746					KM Geo Mean	5.73
97					KM SD (logged)	0.453					95% Critical H Value (KM-Log)	1.867
98					KM Standard Error of Mean (logged)	0.0589					95% H-UCL (KM -Log)	7.087
99					KM SD (logged)	0.453					95% Critical H Value (KM-Log)	1.867
100					KM Standard Error of Mean (logged)	0.0589						
101												
102	**DL/2 Statistics**											
103	**DL/2 Normal**						**DL/2 Log-Transformed**					
104					Mean in Original Scale	6.346					Mean in Log Scale	1.724
105					SD in Original Scale	3.336					SD in Log Scale	0.525
106					95% t UCL (Assumes normality)	7.066					95% H-Stat UCL	7.326
107	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
108												
109	**Nonparametric Distribution Free UCL Statistics**											
110	**Detected Data appear Approximate Lognormal Distributed at 10% Significance Level**											
111												
112	**Suggested UCL to Use**											
113					KM H-UCL	7.087						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
117	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
118												
119	BaP_ExpConc											
120												
121	**General Statistics**											
122					Total Number of Observations	54					Number of Distinct Observations	53
123					Number of Detects	52					Number of Non-Detects	2
124					Number of Distinct Detects	51					Number of Distinct Non-Detects	2
125					Minimum Detect	0.00368					Minimum Non-Detect	3.3
126					Maximum Detect	2.84					Maximum Non-Detect	3.4
127					Variance Detects	0.186					Percent Non-Detects	3.704%
128					Mean Detects	0.131					SD Detects	0.432
129					Median Detects	0.028					CV Detects	3.29
130					Skewness Detects	5.455					Kurtosis Detects	32.19
131					Mean of Logged Detects	-3.443					SD of Logged Detects	1.31
132												
133	**Normal GOF Test on Detects Only**											
134					Shapiro Wilk Test Statistic	0.311	**Normal GOF Test on Detected Observations Only**					
135					1% Shapiro Wilk P Value	0	Detected Data Not Normal at 1% Significance Level					
136					Lilliefors Test Statistic	0.413	**Lilliefors GOF Test**					
137					1% Lilliefors Critical Value	0.141	Detected Data Not Normal at 1% Significance Level					
138	**Detected Data Not Normal at 1% Significance Level**											
139												
140	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
141					KM Mean	0.131					KM Standard Error of Mean	0.0599

	A-E	F	G-K	L
142	90KM SD	0.428	95% KM (BCA) UCL	0.252
143	95% KM (t) UCL	0.231	95% KM (Percentile Bootstrap) UCL	0.236
144	95% KM (z) UCL	0.23	95% KM Bootstrap t UCL	0.507
145	90% KM Chebyshev UCL	0.311	95% KM Chebyshev UCL	0.392
146	97.5% KM Chebyshev UCL	0.505	99% KM Chebyshev UCL	0.727
147				
148	**Gamma GOF Tests on Detected Observations Only**			
149	A-D Test Statistic	6.779	**Anderson-Darling GOF Test**	
150	5% A-D Critical Value	0.825	Detected Data Not Gamma Distributed at 5% Significance Level	
151	K-S Test Statistic	0.303	**Kolmogorov-Smirnov GOF**	
152	5% K-S Critical Value	0.131	Detected Data Not Gamma Distributed at 5% Significance Level	
153	**Detected Data Not Gamma Distributed at 5% Significance Level**			
154				
155	**Gamma Statistics on Detected Data Only**			
156	k hat (MLE)	0.456	k star (bias corrected MLE)	0.443
157	Theta hat (MLE)	0.288	Theta star (bias corrected MLE)	0.296
158	nu hat (MLE)	47.45	nu star (bias corrected)	46.05
159	Mean (detects)	0.131		
160				
161	**Gamma ROS Statistics using Imputed Non-Detects**			
162	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
163	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
164	For such situations, GROS method may yield incorrect values of UCLs and BTVs			
165	This is especially true when the sample size is small.			
166	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
167	Minimum	0.00368	Mean	0.127
168	Maximum	2.84	Median	0.0262
169	SD	0.424	CV	3.346
170	k hat (MLE)	0.454	k star (bias corrected MLE)	0.441
171	Theta hat (MLE)	0.279	Theta star (bias corrected MLE)	0.287
172	nu hat (MLE)	49.03	nu star (bias corrected)	47.64
173	Adjusted Level of Significance (β)	0.0456		
174	Approximate Chi Square Value (47.64, α)	32.8	Adjusted Chi Square Value (47.64, β)	32.46
175	95% Gamma Approximate UCL	0.184	95% Gamma Adjusted UCL	0.186
176				
177	**Estimates of Gamma Parameters using KM Estimates**			
178	Mean (KM)	0.131	SD (KM)	0.428
179	Variance (KM)	0.183	SE of Mean (KM)	0.0599
180	k hat (KM)	0.0942	k star (KM)	0.101
181	nu hat (KM)	10.18	nu star (KM)	10.94
182	theta hat (KM)	1.393	theta star (KM)	1.295
183	80% gamma percentile (KM)	0.0928	90% gamma percentile (KM)	0.351
184	95% gamma percentile (KM)	0.761	99% gamma percentile (KM)	2.071
185				
186	**Gamma Kaplan-Meier (KM) Statistics**			
187	Approximate Chi Square Value (10.94, α)	4.539	Adjusted Chi Square Value (10.94, β)	4.426
188	95% KM Approximate Gamma UCL	0.316	95% KM Adjusted Gamma UCL	0.324

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A	B	C	D	E	F	G	H	I	J	K	L
189												
190	**Lognormal GOF Test on Detected Observations Only**											
191					Shapiro Wilk Approximate Test Statistic	0.894	**Shapiro Wilk GOF Test**					
192					10% Shapiro Wilk P Value	9.1099E-5	Detected Data Not Lognormal at 10% Significance Level					
193					Lilliefors Test Statistic	0.155	**Lilliefors GOF Test**					
194					10% Lilliefors Critical Value	0.112	Detected Data Not Lognormal at 10% Significance Level					
195	**Detected Data Not Lognormal at 10% Significance Level**											
196												
197	**Lognormal ROS Statistics Using Imputed Non-Detects**											
198					Mean in Original Scale	0.128					Mean in Log Scale	-3.443
199					SD in Original Scale	0.424					SD in Log Scale	1.285
200					95% t UCL (assumes normality of ROS data)	0.224					95% Percentile Bootstrap UCL	0.23
201					95% BCA Bootstrap UCL	0.286					95% Bootstrap t UCL	0.55
202					95% H-UCL (Log ROS)	0.118						
203												
204	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
205					KM Mean (logged)	-3.443					KM Geo Mean	0.032
206					KM SD (logged)	1.297					95% Critical H Value (KM-Log)	2.733
207					KM Standard Error of Mean (logged)	0.182					95% H-UCL (KM -Log)	0.121
208					KM SD (logged)	1.297					95% Critical H Value (KM-Log)	2.733
209					KM Standard Error of Mean (logged)	0.182						
210	**Note: KM UCLs may be biased low with this dataset. Other substitution method recommended**											
211												
212	**DL/2 Statistics**											
213	**DL/2 Normal**						**DL/2 Log-Transformed**					
214					Mean in Original Scale	0.188					Mean in Log Scale	-3.296
215					SD in Original Scale	0.516					SD in Log Scale	1.49
216					95% t UCL (Assumes normality)	0.306					95% H-Stat UCL	0.207
217	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
218												
219	**Nonparametric Distribution Free UCL Statistics**											
220	**Data do not follow a Discernible Distribution**											
221												
222	**Suggested UCL to Use**											
223					95% KM (t) UCL	0.231						
224												
225	**The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.**											
226	**Please verify the data were collected from random locations.**											
227	**If the data were collected using judgmental or other non-random methods,**											
228	**then contact a statistician to correctly calculate UCLs.**											
229												
230	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
231	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
232	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
233												
234	PCB_ExpConc											
235												

236	**General Statistics**			
237	Total Number of Observations	64	Number of Distinct Observations	57
238	Number of Detects	51	Number of Non-Detects	13
239	Number of Distinct Detects	50	Number of Distinct Non-Detects	8
240	Minimum Detect	0.0271	Minimum Non-Detect	0.0373
241	Maximum Detect	6.69	Maximum Non-Detect	0.51
242	Variance Detects	1.03	Percent Non-Detects	20.31%
243	Mean Detects	0.603	SD Detects	1.015
244	Median Detects	0.3	CV Detects	1.683
245	Skewness Detects	4.73	Kurtosis Detects	26.62
246	Mean of Logged Detects	-1.139	SD of Logged Detects	1.074
247				
248	**Normal GOF Test on Detects Only**			
249	Shapiro Wilk Test Statistic	0.504	**Normal GOF Test on Detected Observations Only**	
250	1% Shapiro Wilk P Value	0	Detected Data Not Normal at 1% Significance Level	
251	Lilliefors Test Statistic	0.285	**Lilliefors GOF Test**	
252	1% Lilliefors Critical Value	0.143	Detected Data Not Normal at 1% Significance Level	
253	**Detected Data Not Normal at 1% Significance Level**			
254				
255	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**			
256	KM Mean	0.509	KM Standard Error of Mean	0.116
257	90KM SD	0.918	95% KM (BCA) UCL	0.71
258	95% KM (t) UCL	0.702	95% KM (Percentile Bootstrap) UCL	0.712
259	95% KM (z) UCL	0.699	95% KM Bootstrap t UCL	0.899
260	90% KM Chebyshev UCL	0.857	95% KM Chebyshev UCL	1.014
261	97.5% KM Chebyshev UCL	1.233	99% KM Chebyshev UCL	1.663
262				
263	**Gamma GOF Tests on Detected Observations Only**			
264	A-D Test Statistic	1.615	**Anderson-Darling GOF Test**	
265	5% A-D Critical Value	0.784	Detected Data Not Gamma Distributed at 5% Significance Level	
266	K-S Test Statistic	0.17	**Kolmogorov-Smirnov GOF**	
267	5% K-S Critical Value	0.128	Detected Data Not Gamma Distributed at 5% Significance Level	
268	**Detected Data Not Gamma Distributed at 5% Significance Level**			
269				
270	**Gamma Statistics on Detected Data Only**			
271	k hat (MLE)	0.921	k star (bias corrected MLE)	0.88
272	Theta hat (MLE)	0.655	Theta star (bias corrected MLE)	0.686
273	nu hat (MLE)	93.9	nu star (bias corrected)	89.71
274	Mean (detects)	0.603		
275				
276	**Gamma ROS Statistics using Imputed Non-Detects**			
277	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
278	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
279	For such situations, GROS method may yield incorrect values of UCLs and BTVs			
280	This is especially true when the sample size is small.			
281	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
282	Minimum	0.01	Mean	0.491

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A-E	F	G-K	L
283	Maximum	6.69	Median	0.242
284	SD	0.932	CV	1.9
285	k hat (MLE)	0.62	k star (bias corrected MLE)	0.602
286	Theta hat (MLE)	0.791	Theta star (bias corrected MLE)	0.816
287	nu hat (MLE)	79.4	nu star (bias corrected)	77.02
288	Adjusted Level of Significance (β)	0.0463		
289	Approximate Chi Square Value (77.02, α)	57.8	Adjusted Chi Square Value (77.02, β)	57.42
290	95% Gamma Approximate UCL	0.654	95% Gamma Adjusted UCL	0.658
291				
292	**Estimates of Gamma Parameters using KM Estimates**			
293	Mean (KM)	0.509	SD (KM)	0.918
294	Variance (KM)	0.843	SE of Mean (KM)	0.116
295	k hat (KM)	0.307	k star (KM)	0.303
296	nu hat (KM)	39.28	nu star (KM)	38.77
297	theta hat (KM)	1.657	theta star (KM)	1.679
298	80% gamma percentile (KM)	0.782	90% gamma percentile (KM)	1.498
299	95% gamma percentile (KM)	2.319	99% gamma percentile (KM)	4.45
300				
301	**Gamma Kaplan-Meier (KM) Statistics**			
302	Approximate Chi Square Value (38.77, α)	25.51	Adjusted Chi Square Value (38.77, β)	25.26
303	95% KM Approximate Gamma UCL	0.773	95% KM Adjusted Gamma UCL	0.78
304				
305	**Lognormal GOF Test on Detected Observations Only**			
306	Shapiro Wilk Approximate Test Statistic	0.986	**Shapiro Wilk GOF Test**	
307	10% Shapiro Wilk P Value	0.914	Detected Data appear Lognormal at 10% Significance Level	
308	Lilliefors Test Statistic	0.0815	**Lilliefors GOF Test**	
309	10% Lilliefors Critical Value	0.113	Detected Data appear Lognormal at 10% Significance Level	
310	**Detected Data appear Lognormal at 10% Significance Level**			
311				
312	**Lognormal ROS Statistics Using Imputed Non-Detects**			
313	Mean in Original Scale	0.506	Mean in Log Scale	-1.379
314	SD in Original Scale	0.925	SD in Log Scale	1.122
315	95% t UCL (assumes normality of ROS data)	0.699	95% Percentile Bootstrap UCL	0.697
316	95% BCA Bootstrap UCL	0.769	95% Bootstrap t UCL	0.894
317	95% H-UCL (Log ROS)	0.651		
318				
319	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**			
320	KM Mean (logged)	-1.397	KM Geo Mean	0.247
321	KM SD (logged)	1.163	95% Critical H Value (KM-Log)	2.257
322	KM Standard Error of Mean (logged)	0.153	95% H-UCL (KM -Log)	0.678
323	KM SD (logged)	1.163	95% Critical H Value (KM-Log)	2.257
324	KM Standard Error of Mean (logged)	0.153		
325				
326	**DL/2 Statistics**			
327	**DL/2 Normal**		**DL/2 Log-Transformed**	
328	Mean in Original Scale	0.511	Mean in Log Scale	-1.362
329	SD in Original Scale	0.924	SD in Log Scale	1.146

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A	B	C	D	E	F	G	H	I	J	K	L
330					95% t UCL (Assumes normality)	0.704					95% H-Stat UCL	0.685
331	DL/2 is not a recommended method, provided for comparisons and historical reasons											
332												
333	Nonparametric Distribution Free UCL Statistics											
334	Detected Data appear Lognormal Distributed at 10% Significance Level											
335												
336	Suggested UCL to Use											
337					KM H-UCL	0.678						
338												
339	The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.											
340	Please verify the data were collected from random locations.											
341	If the data were collected using judgmental or other non-random methods,											
342	then contact a statistician to correctly calculate UCLs.											
343												
344	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
345	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
346	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
347												
348												
349	Pb_SO_ExpConc											
350												
351	General Statistics											
352					Total Number of Observations	60					Number of Distinct Observations	58
353											Number of Missing Observations	0
354					Minimum	45					Mean	315.5
355					Maximum	3060					Median	166.5
356					SD	472.7					Std. Error of Mean	61.03
357					Coefficient of Variation	1.498					Skewness	4.157
358												
359	Normal GOF Test											
360					Shapiro Wilk Test Statistic	0.525	Shapiro Wilk GOF Test					
361					1% Shapiro Wilk P Value	0	Data Not Normal at 1% Significance Level					
362					Lilliefors Test Statistic	0.284	Lilliefors GOF Test					
363					1% Lilliefors Critical Value	0.132	Data Not Normal at 1% Significance Level					
364	Data Not Normal at 1% Significance Level											
365												
366	Assuming Normal Distribution											
367	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
368					95% Student's-t UCL	417.5					95% Adjusted-CLT UCL (Chen-1995)	450.9
369											95% Modified-t UCL (Johnson-1978)	422.9
370												
371	Gamma GOF Test											
372					A-D Test Statistic	3.097	Anderson-Darling Gamma GOF Test					
373					5% A-D Critical Value	0.776	Data Not Gamma Distributed at 5% Significance Level					
374					K-S Test Statistic	0.177	Kolmogorov-Smirnov Gamma GOF Test					
375					5% K-S Critical Value	0.118	Data Not Gamma Distributed at 5% Significance Level					
376	Data Not Gamma Distributed at 5% Significance Level											

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A	B	C	D	E	F	G	H	I	J	K	L
377												
378	Gamma Statistics											
379					k hat (MLE)	1.171					k star (bias corrected MLE)	1.124
380					Theta hat (MLE)	269.3					Theta star (bias corrected MLE)	280.7
381					nu hat (MLE)	140.6					nu star (bias corrected)	134.9
382					MLE Mean (bias corrected)	315.5					MLE Sd (bias corrected)	297.6
383											Approximate Chi Square Value (0.05)	109
384					Adjusted Level of Significance	0.046					Adjusted Chi Square Value	108.5
385												
386	Assuming Gamma Distribution											
387					95% Approximate Gamma UCL	390.2					95% Adjusted Gamma UCL	392.3
388												
389	Lognormal GOF Test											
390					Shapiro Wilk Test Statistic	0.939	Shapiro Wilk Lognormal GOF Test					
391					10% Shapiro Wilk P Value	0.00792	Data Not Lognormal at 10% Significance Level					
392					Lilliefors Test Statistic	0.111	Lilliefors Lognormal GOF Test					
393					10% Lilliefors Critical Value	0.104	Data Not Lognormal at 10% Significance Level					
394	Data Not Lognormal at 10% Significance Level											
395												
396	Lognormal Statistics											
397					Minimum of Logged Data	3.807					Mean of logged Data	5.27
398					Maximum of Logged Data	8.026					SD of logged Data	0.872
399												
400	Assuming Lognormal Distribution											
401					95% H-UCL	365.1					90% Chebyshev (MVUE) UCL	390.9
402					95% Chebyshev (MVUE) UCL	440.2					97.5% Chebyshev (MVUE) UCL	508.8
403					99% Chebyshev (MVUE) UCL	643.4						
404												
405	Nonparametric Distribution Free UCL Statistics											
406	Data do not follow a Discernible Distribution											
407												
408	Nonparametric Distribution Free UCLs											
409					95% CLT UCL	415.9					95% BCA Bootstrap UCL	460
410					95% Standard Bootstrap UCL	415.3					95% Bootstrap-t UCL	499.8
411					95% Hall's Bootstrap UCL	809.3					95% Percentile Bootstrap UCL	420.3
412					90% Chebyshev(Mean, Sd) UCL	498.6					95% Chebyshev(Mean, Sd) UCL	581.5
413					97.5% Chebyshev(Mean, Sd) UCL	696.6					99% Chebyshev(Mean, Sd) UCL	922.7
414												
415	Suggested UCL to Use											
416					95% Student's-t UCL	417.5						
417												
418	The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.											
419	Please verify the data were collected from random locations.											
420	If the data were collected using judgmental or other non-random methods,											
421	then contact a statistician to correctly calculate UCLs.											
422												
423	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											

	A–E	F	G–K	L
424	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
425	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
426				
427				
428	Pb_Sludge_ExpConc			
429				
430	**General Statistics**			
431	Total Number of Observations	14	Number of Distinct Observations	14
432			Number of Missing Observations	0
433	Minimum	60	Mean	467.8
434	Maximum	1600	Median	325
435	SD	433.1	Std. Error of Mean	115.7
436	Coefficient of Variation	0.926	Skewness	1.443
437				
438	**Normal GOF Test**			
439	Shapiro Wilk Test Statistic	0.844	**Shapiro Wilk GOF Test**	
440	1% Shapiro Wilk Critical Value	0.825	Data appear Normal at 1% Significance Level	
441	Lilliefors Test Statistic	0.201	**Lilliefors GOF Test**	
442	1% Lilliefors Critical Value	0.263	Data appear Normal at 1% Significance Level	
443	**Data appear Normal at 1% Significance Level**			
444				
445	**Assuming Normal Distribution**			
446	**95% Normal UCL**		**95% UCLs (Adjusted for Skewness)**	
447	95% Student's-t UCL	672.8	95% Adjusted-CLT UCL (Chen-1995)	705.9
448			95% Modified-t UCL (Johnson-1978)	680.2
449				
450	**Gamma GOF Test**			
451	A-D Test Statistic	0.322	**Anderson-Darling Gamma GOF Test**	
452	5% A-D Critical Value	0.755	Detected data appear Gamma Distributed at 5% Significance Level	
453	K-S Test Statistic	0.146	**Kolmogorov-Smirnov Gamma GOF Test**	
454	5% K-S Critical Value	0.234	Detected data appear Gamma Distributed at 5% Significance Level	
455	**Detected data appear Gamma Distributed at 5% Significance Level**			
456				
457	**Gamma Statistics**			
458	k hat (MLE)	1.292	k star (bias corrected MLE)	1.063
459	Theta hat (MLE)	362.2	Theta star (bias corrected MLE)	440.3
460	nu hat (MLE)	36.17	nu star (bias corrected)	29.75
461	MLE Mean (bias corrected)	467.8	MLE Sd (bias corrected)	453.8
462			Approximate Chi Square Value (0.05)	18.3
463	Adjusted Level of Significance	0.0312	Adjusted Chi Square Value	17.11
464				
465	**Assuming Gamma Distribution**			
466	95% Approximate Gamma UCL	760.6	95% Adjusted Gamma UCL	813.3
467				
468	**Lognormal GOF Test**			
469	Shapiro Wilk Test Statistic	0.952	**Shapiro Wilk Lognormal GOF Test**	
470	10% Shapiro Wilk Critical Value	0.895	Data appear Lognormal at 10% Significance Level	

	A	B	C	D	E	F	G	H	I	J	K	L
471					Lilliefors Test Statistic	0.13			**Lilliefors Lognormal GOF Test**			
472					10% Lilliefors Critical Value	0.208			Data appear Lognormal at 10% Significance Level			
473						**Data appear Lognormal at 10% Significance Level**						
474												
475						**Lognormal Statistics**						
476					Minimum of Logged Data	4.094					Mean of logged Data	5.713
477					Maximum of Logged Data	7.378					SD of logged Data	1.022
478												
479						**Assuming Lognormal Distribution**						
480					95% H-UCL	1137					90% Chebyshev (MVUE) UCL	916.6
481					95% Chebyshev (MVUE) UCL	1112					97.5% Chebyshev (MVUE) UCL	1384
482					99% Chebyshev (MVUE) UCL	1917						
483												
484						**Nonparametric Distribution Free UCL Statistics**						
485						**Data appear to follow a Discernible Distribution**						
486												
487						**Nonparametric Distribution Free UCLs**						
488					95% CLT UCL	658.2					95% BCA Bootstrap UCL	722.1
489					95% Standard Bootstrap UCL	655.6					95% Bootstrap-t UCL	753.2
490					95% Hall's Bootstrap UCL	774.2					95% Percentile Bootstrap UCL	671.1
491					90% Chebyshev(Mean, Sd) UCL	815					95% Chebyshev(Mean, Sd) UCL	972.3
492					97.5% Chebyshev(Mean, Sd) UCL	1191					99% Chebyshev(Mean, Sd) UCL	1619
493												
494						**Suggested UCL to Use**						
495					95% Student's-t UCL	672.8						
496												
497	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
498	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
499	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
500												
501												
502	Pb_ExpConc											
503												
504						**General Statistics**						
505					Total Number of Observations	74					Number of Distinct Observations	71
506											Number of Missing Observations	0
507					Minimum	45					Mean	344.3
508					Maximum	3060					Median	179.5
509					SD	466.5					Std. Error of Mean	54.23
510					Coefficient of Variation	1.355					Skewness	3.625
511												
512						**Normal GOF Test**						
513					Shapiro Wilk Test Statistic	0.601			**Shapiro Wilk GOF Test**			
514					1% Shapiro Wilk P Value	0			Data Not Normal at 1% Significance Level			
515					Lilliefors Test Statistic	0.261			**Lilliefors GOF Test**			
516					1% Lilliefors Critical Value	0.119			Data Not Normal at 1% Significance Level			
517						**Data Not Normal at 1% Significance Level**						

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A	B	C	D	E	F	G	H	I	J	K	L
518												
519	**Assuming Normal Distribution**											
520	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
521					95% Student's-t UCL	434.6					95% Adjusted-CLT UCL (Chen-1995)	457.9
522											95% Modified-t UCL (Johnson-1978)	438.5
523												
524	**Gamma GOF Test**											
525					A-D Test Statistic	2.941	**Anderson-Darling Gamma GOF Test**					
526					5% A-D Critical Value	0.777	Data Not Gamma Distributed at 5% Significance Level					
527					K-S Test Statistic	0.158	**Kolmogorov-Smirnov Gamma GOF Test**					
528					5% K-S Critical Value	0.106	Data Not Gamma Distributed at 5% Significance Level					
529	**Data Not Gamma Distributed at 5% Significance Level**											
530												
531	**Gamma Statistics**											
532					k hat (MLE)	1.164					k star (bias corrected MLE)	1.126
533					Theta hat (MLE)	295.8					Theta star (bias corrected MLE)	305.9
534					nu hat (MLE)	172.2					nu star (bias corrected)	166.6
535					MLE Mean (bias corrected)	344.3					MLE Sd (bias corrected)	324.5
536											Approximate Chi Square Value (0.05)	137.7
537					Adjusted Level of Significance	0.0468					Adjusted Chi Square Value	137.2
538												
539	**Assuming Gamma Distribution**											
540					95% Approximate Gamma UCL	416.4					95% Adjusted Gamma UCL	418
541												
542	**Lognormal GOF Test**											
543					Shapiro Wilk Test Statistic	0.949	**Shapiro Wilk Lognormal GOF Test**					
544					10% Shapiro Wilk P Value	0.0116	Data Not Lognormal at 10% Significance Level					
545					Lilliefors Test Statistic	0.0985	**Lilliefors Lognormal GOF Test**					
546					10% Lilliefors Critical Value	0.0943	Data Not Lognormal at 10% Significance Level					
547	**Data Not Lognormal at 10% Significance Level**											
548												
549	**Lognormal Statistics**											
550					Minimum of Logged Data	3.807					Mean of logged Data	5.354
551					Maximum of Logged Data	8.026					SD of logged Data	0.911
552												
553	**Assuming Lognormal Distribution**											
554					95% H-UCL	403.9					90% Chebyshev (MVUE) UCL	435.3
555					95% Chebyshev (MVUE) UCL	488.5					97.5% Chebyshev (MVUE) UCL	562.3
556					99% Chebyshev (MVUE) UCL	707.3						
557												
558	**Nonparametric Distribution Free UCL Statistics**											
559	**Data do not follow a Discernible Distribution**											
560												
561	**Nonparametric Distribution Free UCLs**											
562					95% CLT UCL	433.5					95% BCA Bootstrap UCL	469
563					95% Standard Bootstrap UCL	432.3					95% Bootstrap-t UCL	479
564					95% Hall's Bootstrap UCL	499.7					95% Percentile Bootstrap UCL	437.5

Attachment B
Table 2
ProUCL Output
Waste Water Pollution Control Plant, Waste Water Treatment Wetland Project, City of San Leandro, San Leandro, California

	A	B	C	D	E	F	G	H	I	J	K	L
565					90% Chebyshev(Mean, Sd) UCL	507					95% Chebyshev(Mean, Sd) UCL	580.7
566					97.5% Chebyshev(Mean, Sd) UCL	683					99% Chebyshev(Mean, Sd) UCL	883.9
567												
568						Suggested UCL to Use						
569					95% Student's-t UCL	434.6						
570												
571	The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.											
572	Please verify the data were collected from random locations.											
573	If the data were collected using judgmental or other non-random methods,											
574	then contact a statistician to correctly calculate UCLs.											
575												
576	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
577	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
578	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
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